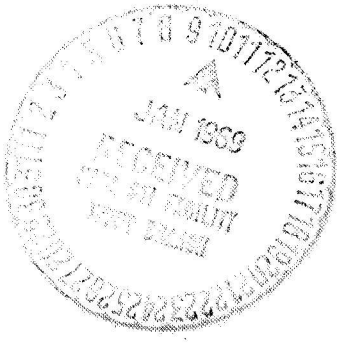
NASA SP-7011 (56)

CASE FILE COPY

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY

WITH INDEXES



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA Continuing Bibliographies are annotated and indexed compilations of abstracts of reports and journal articles on aerospace subjects. The subjects are selected for their relationship to current developments in the space program and in response to an established interest by the aerospace community. Continuing Bibliographies are updated periodically by supplements.

PUBLICATIONS IN THE CONTINUING BIBLIOGRAPHY PROGRAM

High Energy Propellants	NASA SP-7002
Lunar Surface Studies	NASA SP-7003
Communications Satellites	NASA SP-7004
Bibliographies on Aerospace Science	NASA SP-7006
Lasers and Masers	NASA SP-7009
Aerospace Medicine and Biology	NASA SP-7011
Planetary Atmospheres	NASA SP-7017
Lubrication, Corrosion and Wear	NASA SP-7020

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Documentation Incorporated.

NASA SP-7011(56)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA Information System during October, 1968.

Scientific and Technical Information Division
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. NOVEMBER 1968

This document is available from the Clearinghouse for Federal Scientific and Technical Information (CFSTI), Springfield, Virginia, 22151, for $3.00.

INTRODUCTION

Aerospace Medicine and Biology is a continuing bibliography which, by means of periodic supplements, serves as a current abstracting and announcement medium for references on this subject. The publication is compiled through the cooperative efforts of the Aerospace Medicine and Biology Bibliography Project of the Library of Congress (LC), the American Institute of Aeronautics and Astronautics (AIAA), and NASA. It assembles, within the covers of a single bibliographic announcement, groups of references that were formerly announced in separate journals, and provides a convenient compilation for medical and biological scientists. Additional background details for this publication can be found in the first issue, NASA SP-7011, which was published in July, 1964. Supplements are identified by the same number followed by two additional digits in parentheses.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects on biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis will be placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion. The contents of this issue are comprised of abstracts that were prepared by the three contributing organizations.

Each entry consists of a standard citation accompanied by its abstract. It is included in one of three groups of references that appear in the following order:

a. NASA entries identified by their *STAR* accession numbers (N68-10000 series);
b. AIAA entries identified by their *IAA* accession numbers (A68-10000 series); and
c. LC entries identified by a number in the A68-80000 series.

Many of the abstracts included in this publication have been reproduced from those appearing in *STAR* and *IAA*. This procedure, adopted in the interests of economy and speed, has introduced some variation in size, style, and intensity of type.

AVAILABILITY OF DOCUMENTS

STAR Entries

NASA documents listed are available without charge to:

1. NASA Offices, Centers, contractors, subcontractors, grantees, and consultants.
2. Other U.S. Government agencies and their contractors.
3. Libraries in the United States that maintain collections of NASA documents for public reference.
4. Other organizations in the United States having a need for NASA documents in work related to the aerospace program.
5. Foreign government or academic (university) organizations that have established reciprocal arrangements for the exchange of publications with NASA, that have current agreements for scientific and technical cooperative activities with NASA, or that have arrangements with NASA to maintain collections of NASA documents for public use.

Department of Defense documents (identified by the "AD" number in the citation) are available without charge to U.S. Government-sponsored research and development activities from the Defense Documentation Center (DDC), Cameron Station, Alexandria, Virginia 22314. Department of Defense documents are not available from NASA.

Other non-NASA documents are provided by NASA without charge only to NASA Offices, Centers, contractors, subcontractors, grantees, and consultants. Foreign non-copyrighted documents will be provided to U.S. Government Agencies and their contractors. AGARD reports that are not commercially available will be made available on the same basis as NASA documents.

Documents that have been placed on microfiche are identified with the symbol #. Microfiche are available on the same basis as hard copy.

The public may purchase the documents listed from either of two sales agencies, as specifically identified in the citations.

Clearinghouse for Federal Scientific
and Technical Information (CFSTI),
Springfield, Virginia 22151

Superintendent of Documents
U.S. Government Printing Office (GPO)
Washington, D.C. 20502

Information on the availability of this publication and other reports covering NASA scientific and technical information may be obtained by writing to:

Scientific and Technical Information Division
National Aeronautics and Space Administration
Code USS-AD
Washington, D.C. 20546.

Collections of NASA documents are currently on file in the organizations listed on the inside of the back cover.

(continued)

IAA Entries

All cited documents are available from the AIAA Technical Information Service as follows: Paper copies are available at $3.00 per document up to a maximum of 20 pages. The charge for each additional page is $0.25. Microfiche are available at the rate of $0.50 per microfiche for documents identified by the symbol # following the accession number. A number of publications, because of their special characteristics, are available only for reference in the AIAA Technical Information Service Library. Minimum air-mail postage to foreign countries is $1.00.

Please refer to the accession number, e.g., A68-13193, when requesting documents. Address all inquiries and requests to:

Technical Information Service
American Institute of Aeronautics and Astronautics, Inc.
750 Third Avenue
New York, N. Y. 10017

For further details please consult the *Introductions* to *STAR* and *IAA*, respectively.

LC Entries

Articles listed are available in the journals in which they appeared. They may be borrowed or consulted in libraries maintaining sets of these journals. In some instances, reprints may be available from the journal offices.

AVAILABILITY OF THIS BIBLIOGRAPHY

Copies of *Aerospace Medicine and Biology* (SP-7011) and its supplements can be obtained from NASA (Code USS-A), without charge, by NASA offices and contractors, U.S. Government agencies and their contractors, and organizations that are working in direct support of NASA programs.

Other organizations can purchase copies of the bibliography from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

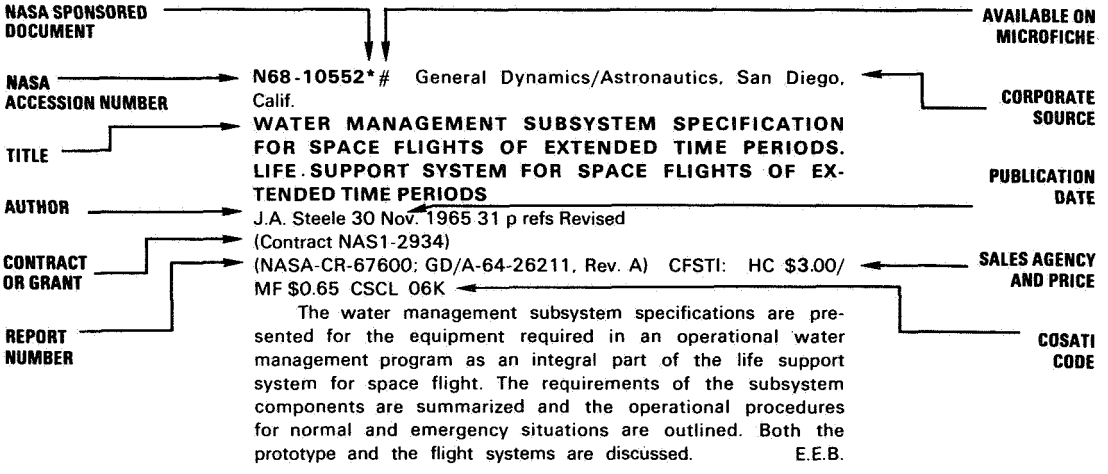
TABLE OF CONTENTS

Page

STAR Entries (N68-10000) 1
IAA Entries (A68-10000) 23
LC Entries (A68-80000) 55

Subject Index I-1
Corporate Source Index I-57
Personal Author Index I-63

TYPICAL CITATION AND ABSTRACT



AEROSPACE MEDICINE AND BIOLOGY

a continuing bibliography NOVEMBER 1968

STAR ENTRIES

N68-30948 Centre National de la Recherche Scientifique, Paris (France).
RECORDING OF SIMPLE ACOUSTIC SIGNALS AT THE LEVEL OF THE HUMAN TYMPANUM [ENREGISTREMENT DE SIGNAUX ACOUSTIQUES SIMPLES AU NIVEAU DU TYMPAN HUMAIN]
Jean Foret [1965] 7 p refs In FRENCH
CFSTI: $3.00

Details are given on the experimental techniques and apparatus used to record the responses of subjects to sound signals transmitted to their eardrums. Comparisons are drawn between the acoustic pressure measured at the external ear and at the eardrum for variable pure frequencies and for rattling noise. Wide variations in human response were noted. The data obtained were considered in the context of developing electro-acoustical analogies between the external ear and the response of a structure to auditory stimulation. Transl. by M.G.J.

N68-30963# Universidad Peruana de Ciencias Medicas y Biologicas, Lima (Peru).
CELLULAR AND TISULAR ADAPTATION TO HYPOXIA Annual Report, Apr. 1967–Mar. 1968
Alberto Cazorla Mar. 1968 66 p refs
(Grant DA-ARO(D)-49-092-66-G123)
(AR-2; AD-671030)

The following adaptive mechanisms to chronic hypoxia are under investigation: (1) Larger P/O ratio in vivo; (2) Increased anaerobic energy production; (3) Changes in citric acid cycle intermediate concentrations. The concentrations of L-Lactate and L-alpha-glycerophosphate in red muscle, white muscle, liver and heart from high altitude guinea pigs, under aerobic and ischemic conditions were determined. Considering the results obtained, enough evidence is presented to discard a previous hypothesis, which stated that L-alpha-glycerophosphate has an important role as final product of anaerobic glycolysis. The results of these investigations show a reduced accumulation of these substances in the ischemic liver of animals from high altitude as compared to those from sea level. This suggests among other possibilities that liver tissue of animals adapted to chronic hypoxia metabolize L-Lactate more efficiently in ischemic conditions. The results in other tissues are also discussed. Using gas-liquid chromatography, red muscle, liver, heart and kidney tissue under conditions of ischemia at sea level and high altitude were analyzed for the Krebs cycle intermediates. Succinic, malic, and citric acids are easily measurable. Obvious differences in succinic acid concentration were found between the two groups, and 2 unknown substances were found only in kidney and heart tissue from high altitude animals. Author (TAB)

N68-31008*# Baylor Univ., Houston, Tex. Coll. of Medicine
COMPREHENSIVE BIOLOGICAL PROTOCOL FOR THE LUNAR SAMPLE RECEIVING LABORATORY
16 Jun. 1967 572 p refs
(Contract NAS9-6157)
(NASA-CR-92209; MSC-DA-D-68-1) CFSTI: HC $3.00/MF $0.65
CSCL 06M

This study concerns the biological quarantine for the safe handling and study of lunar material to be returned to earth from early Apollo missions. It is planned to isolate such material as well as the spacecraft and the crew initially while the lunar sample would be tested for the possible presence of agents that might be infectious or toxic for man, animals, and plants. The three main elements of the study are: (1) crew microbiology; (2) *in vitro* attempts to culture microorganisms from the lunar sample; and (3) the direct challenge of the lunar sample in biological system. Although broad in scope, this study contains detailed instructive information and technical data for the laboratory tests of the lunar sample in representative members of all major taxa. K.W.

N68-31035# Research Triangle Inst., Durham, N. C.
AN ATMOSPHERIC PHYSICS AND CHEMISTRY STUDY ON PIKES PEAK IN SUPPORT OF PULMONARY EDEMA RESEARCH Final Report, 13 Mar. 1967–12 May 1968
Harry L. Hamilton, Jr., James J. B. Worth, and Lyman A. Ripperton May 1968 58 p refs
(Contract DAHC19-67-C-0029)
(AD-670989)

Measurements of atmospheric trace gases on the summit of Pikes Peak (14,110 ft) from late July through mid-October 1967 were made in support of pulmonary edema research. Supporting meteorological data were also collected. Local intermittent contamination by combustion products afforded an opportunity to examine conditions corresponding to those which might be experienced by troops in encampments. Concentrations of ozone (O3), in uncontaminated air showed a maximum at night and a minimum during the daytime. The daytime minimum is attributed to mixing of the air from the altitude of the peak with O3-depleted air from near ground level in adjacent valleys and plains. In contaminated air, O3 concentration on the average showed no maximum, and mean values for each hour were considerably lower than in uncontaminated air. This reduction results from destruction of ozone by NO from combustion products; measured concentrations of NO appear adequate to account for the decrease in O3. Auxiliary stations for O3 measurement on the mountainside (10,840 ft) and at the base of the mountain (7,780 ft) showed the daytime maximum and nighttime minimum normally experienced in the

lowlands. A trend from high concentrations of O3 in July to lower concentrations in October is apparent, conforming with the normal pattern of tropospheric ozone. A dampening of the diurnal wave pattern of O3 concentration is evident as the average concentration decreases. Author (TAB)

N68-31059# Universidad Peruana de Ciencias Medicas Y Biologicas, Lima (Peru). Instituto de Investigaciones de la Altura.
HORMONE METABOLISM IN MEN EXPOSED TO HIGH ELEVATION Annual Report, 1 May 1967–30 Apr. 1968
Roger Guerra-Garcia Apr. 1968 12 p refs
(Contract DAHC19-67-G-0021)
(AR-2; AD-671035)

Data are presented on Testosterone Production Rate (TPR) in eight normal men acutely exposed to high altitude. The mean control value at sea level was 6.693 mg/24 hr. similar to that obtained after 60 hr. in Cerro de Pasco (altitude 14.200 ft) 5.648 mg/24 hs. ($p > 0.5$). However, there was a considerable individual variation and no correlation between the TPR and the urinary excretion of testosterone. It is concluded that the determination of the TPR by urinary methods is not adequate in circumstances of adrenal stimulation by ACTH. The excretion of radioactivity in the urine was similar at sea level and high altitude: 79.4 and 78.2% respectively; the same occurred with the 17-Ketosteroids for which mean values were 19.77 and 22.09 mg/48 hr. ($p > 0.5$). Author (TAB)

N68-31101*# General Dynamics/Convair, San Diego, Calif.
EFFECT OF INSTABILITY DURING ROTATION ON PHYSIOLOGIC AND PERCEPTUAL-MOTOR FUNCTION Final Report
Jun. 1968 100 p refs
(Contract NAS9-6986)
(NASA-CR-92211; GDC-DBD67-002-12) CFSTI: HC $3.00/MF $0.65 CSCL 05H

A rotogravity environment has been studied on the basis of radius requirement and rotational velocity limitations for crew habituation and performance. The effect of perturbation during rotation is the subject of this study. Investigated is the effect of rotation and sinusoidal perturbation on a seated subject performing a battery of perceptual-motor tests representative of the tasks required by an astronaut crew with the added factor of a rapid head motion upon the perturbating environment at high rates of rotation. The criteria were performance of an eye–hand response test and the time it took for the subject to fixate on a point display following the head turn. The perturbation effects on the time it took for the habituation of a single perceptual element to rotation and the disorientation that results from a rapid head motion is evaluated by the "Oculogyral Illusion" that occurs in a darkened room. An illuminated target appears to drift about and this motion is extinguished as habituation occurs. Results indicate that sinusoidal motions of the magnitude anticipated in space stations should not complicate the performance of crew tasks that do not require the translation of a subject in that environment. Author

N68-31149# George Washington Univ., Alexandria, Va. Human Resources Research Office.
A CONCEPT OF THE ROLE OF MAN IN AUTOMATED SYSTEMS
William H. Melching May 1968 11 p refs Presented at the *Southwestern Psychological Assoc. Ann. Meeting, New Orleans,* Apr. 1968 *Its* Profess. Paper 14–68
(Contract DA-44-188-ARO-2)
(AD-671128)

A problem that has long plagued system designers and human factors engineers is that of allocation of functions between man and machine. This paper reports an attempt to isolate and identify factors pertinent to making allocation decisions. From an analysis of the functions and missions of several automated systems, six factors were shown to be highly relevant to allocation decisions. One factor, mans role in automated systems, emerged as a variable of particular interest. In addition, four classes of manual functions common to all automated systems were identified. It was determined that these classes, in turn, constituted a meaningful description of the role of man in todays automated systems. Author (TAB)

N68-31184# Naval School of Aviation Medicine, Pensacola, Fla.
THE RELATIONSHIP OF THE NAVAL AVIATOR'S SPEECH DISCRIMINATION TEST TO THE PURE TONE AUDIOGRAM
James W. Green Apr. 1968 21 p refs
(NAMI-1037; AD-671188)

The pure tone threshold audiogram required annually for naval aviators provides limited information toward determining their ability to understand speech in the aircraft. The Naval Aviators Speech Discrimination Test (NASDT) was developed to evaluate objectively the ability to understand very loud speech in a background of aircraft noise for those aviators whose hearing failed to meet the standards. An earlier study had indicated that there was no relationship between the results of the NASDT and the configuration of the pure tone audiogram; therefore, to further examine this finding, data from pure tone threshold tests and the NASDT were obtained for over 500 men with different degrees of flight experience. Statistical analysis of the NASDT results showed that there was great consistency in scores made by the different groups. No practical correlations between NASDT scores and hearing threshold levels were found. Since the NASDT, therefore, appears to provide a more realistic evaluation of hearing in aircraft noise, it is suggested that it be employed as a supplementary test in the hearing evaluations of all aviators. Author (TAB)

N68-31190# Aerospace Medical Div. Aerospace Medical Research Labs. (6570th), Wright-Patterson AFB, Ohio.
THE EFFECTS OF HIGH INTENSITY NOISE ON HUMAN PERFORMANCE Final Report, Oct. 1966–Jan. 1967
C. Stanley Harris Jan. 1968 25 p refs
(AMRL-TR-67-119; AD-671116)

Four experiments were conducted on the effects of broadband, high intensity noise on human performance. In two experiments the subjects performance was measured on a Discrimination Task, based primarily upon visual discrimination and short term memory, and in the other two experiments performance was measured on a Hand-Tool Dexterity Test. Four different noise exposure conditions were used in each experiment: control (70 dB), 120 dB, 130 dB, and 140 dB (re 0.0002 dyne/sq cm). In one experiment using the Discrimination Task, the subjects wore earplugs, and in the other, subjects wore earplugs and an earmuff with one earcup to produce an asymmetrical noise exposure at the ears. These two types of ear protectors were worn also by the subjects in the two experiments using the Hand-Tool Dexterity Task. Decrements on the Discrimination Task were obtained at the two highest noise intensities for the asymmetrical exposure and no decrements were obtained for any symmetrical exposure. With the Hand-Tool Dexterity Test, significant decrements were obtained at the noise levels of 130 dB and 140 dB with symmetrical exposure, and at 140 dB with the asymmetrical exposure. The difference in performance between the two groups was due to a different initial level of ability on the task rather than due to symmetrical versus asymmetrical exposure conditions. The results indicate that asymmetrical exposure had a greater detrimental effect on the Discrimination Task than the symmetrical exposure, while there was no differential effect on the Hand-Tool Dexterity Test. These results are discussed as a possible effect of the action of high intensity noise on the vestibular system. Author (TAB)

N68-31215*# Linde Co., Tonawanda, N. Y. Research Lab.
DECOMPRESSION PROCEDURES FOR THE SAFE ASCENT OF AEROSPACE PERSONNEL—GROUND LEVEL TO ALTITUDE Final Report
4 May 1968 64 p refs
(Contract NAS9-6978)
(NASA-CR-92212) CFSTI: HC$3.00/MF$0.65 CSCL 06S

The Tonawanda II model of inert gas transport was studied as a predictor of incidence of decompression sickness in flight profiles by using calculated inert gas tensions in the ascent-limiting compartment. Time course of the sum of inert gas partial pressures was calculated in 12 simulated MOL profiles flown in altitude chambers, and the 12 profiles were ranked in terms of relative severity of the episodes of supersaturation associated with each. When this ranking was compared with actual bends experience associated, the mathematical model predicted 10 of the profiles. Computer analyses were made of 388 flight records, using the highest Haldane ratio sustained in each flight as the basis for correlation with incidence of decompression sickness. Incidence increased with increasing maximum Haldane ratio except for an abnormally low rate in the 2.21 to 2.40 ratio for flights in which helium was not breathed. Data are included for nitrogen flights, and graphic displays were prepared of the time course of inert gas tensions. M.W.R.

N68-31243*# Hamilton Standard Div., United Aircraft Corp., Windsor Locks, Conn.
A STUDY TO ANALYZE THE DEVELOP DESIGN CRITERIA FOR A FLIGHT-CONCEPT PROTOTYPE VAPOR DIFFUSION WATER RECLAMATION UNIT Final Report, Apr. 1967–Apr. 1968
Henry Kolnsberg and Melvin Stoltz 19 Jul. 1968 84 p refs
(Contract NAS1-7170)
(NASA-CR-66637) CFSTI: HC$3.00/MF$0.65 CSCL 05E

A vapor diffusion water reclamation system was studied for the purpose of defining the design parameters for a flight-concept prototype. A mathematical model of the vapor diffusion process was formulated and verified by experimentation. Among the variables studied were recirculation flow rate, differential temperatures, gap width, gap gas composition and pressures. It was found that the overall vapor diffusion rate varies significantly only with the nature of the membrane, the gap width, and the gap gas composition. Author

N68-31303# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
RADIOELECTRONIC EQUIPMENT FOR TEMPORAL ANALYSIS OF REFLEXES
Ya. O. Bodser and M. I. Klevtsov Jul. 1967 77 p refs Transl. into ENGLISH of the book "Radioelektronnaya Apparatura Dlya Uremennogo Analiza Refleksov" Moscow, 1964 p 1–64
(FTD-MT-66-133; AD-670948)

Chapters of this report are devoted to the following aspects: (1) Reflexes, their significance and analysis. (2) Basic elements of radioelectron equipment for temporal analysis of reflexes. (3) Regular production and experimental models of instruments for measurement of reflexes. (4) Radioflexometry. Author (TAB)

N68-31315# John B. Pierce Foundation of Connecticut, New Haven.
ON THE STUDY OF THE EFFECTS OF ADDITIONAL ENDOGENOUS HEAT Annual Report, 1 Jul. 1966–30 Jun. 1967
James D. Hardy, Robert O. Rawson, and Jan A. J. Stolwijk 1967 88 p refs
(Contract PH-43-66-978)
(PB-176914) CFSTI: HC$3.00/MF$0.65

It was proposed to design heat exchange devices and experiments to study the effects of introducing heat internally in experimental animals; to study the effects of this additional heat upon tissue immediately adjacent to the heat sources, and its effects upon the organism as a whole. Electrical heat sources were designed and implanted to deliver heat subcutaneously, and intravenously, perivascularly, submuscularly and intra-abdominally. The addition of endogenous heat submuscularly or intra-abdominally proved to be a feasible approach to this problem. It was learned from these experiments that high interface temperatures of 45°C, usually considered detrimental to tissue cell continuity, stimulate rapid compensatory mechanisms of action which may prove to be a valuable asset to the further development of heat exchange systems implanted within the body. Author (USGRDR)

N68-31335# Indiana Univ., Bloomington. Dept. of Psychology.
A COMPARISON OF GSR AND SUBJECTIVE ADAPTATION TO STRESSFUL STIMULI
Robert M. Stern (Pa. State Univ.), Larry Gaupp (Pa. State Univ.), and William C. Leonard Jul. 1968 23 p refs
(Contract Nonr-908(15))
(TR-25; AD-671199)

The purpose of this study was to compare subjective and physiological adaptation, as measured by magnitude of GSRs, to electric shock and auditory noise. In Exp. I 48 Ss received 15 shocks of constant intensity, one subgroup always receiving low shocks, the other high. Ss were told that shock intensity would vary and rated the intensity of each shock immediately following its presentation. In Exp. II the same procedure was followed with 50 different Ss using noises instead of shocks. Shock Ss showed significant subjective adaptation but no GSR adaptation. Noise Ss showed GSR adaptation with a significant increase in subjective intensity reports. The importance of anticipation, in terms of level of arousal, at the onset of the session is discussed. Author (TAB)

N68-31350*# Battelle Memorial Inst., Richland, Wash. Dept. of Biology.
INFLUENCE OF CHRONIC RESTRAINT ON GASTROINTESTINAL FUNCTION IN THE RAT Final Technical Report
M. F. Sullivan [1968] 67 p refs
(NASA Order A-73704)
(NASA-CR-73233; BNWL-CC-1159-6) CFSTI: HC $3.00/MF $0.65 CSCL 06C

Effects of chronic restraint on body weights and gastrointestinal movements of rats was studied under normal, high fat, and low fat diets and with cobalt 60 irradiation. Restraint depressed growth rate of animals on normal diets; and low fat diets reduced growth rates, with restraint further reducing growth rate. While nonrestrained animals on high fat diets had normal growth rates, restrained animals on this diet exhibited low or negative rates. Both sham irradiation and continuous exposure at 50 R affected restrained animals slightly more than nonrestrained animals, but 300 R daily irradiation eliminated any difference in weight loss between the groups. Little or no difference was found between passage times of intestinal contents of either group of animals on normal diets, although passage time for restrained animals on either low or high fat diets was slightly faster. Little difference was found in either group when exposed to irradiation, and there was little change in bacterial content with respect to restraint or diet. M.W.R.

N68-31363# Bell Aerosystems Co., Buffalo, N. Y.
THE INFLUENCE OF NETWORK STRUCTURE ON THE PERFORMANCE OF LEARNING SYSTEMS
Johannes G. Goerner, Lester A. Gerhardt, Kenneth W. Drake, James A. Cadzow, and Frederic D. Powell 31 Oct. 1967 92 p refs
(Contract AF 49(638)-1627)
(Rept.-9500-920089; AFOSR-68-1350; AD-670845)

The report summarizes research on means for improving the discrimination capability of linear single-gain layer networks. Improvements are considered via (a) nonlinear pre-processors, such as the A/D converter, the quantizer, and other encoders, the generation of functionals of the individual pattern components, and (b) cascading of these networks. All result essentially in introducing a nonlinear decision surface instead of the decision hyperplane as defined by a linear net. Significant improvements are obtainable that widen the application of such networks to practical problems. As an example, the modeling of an air cushion vehicle is discussed. Author (TAB)

N68-31382# *Naval Submarine* Medical Center, Groton, Conn. *Submarine* Medical Research Lab.
EVALUATION OF THE RAPID RECOMPRESSION-HIGH PRESSURE OXYGENATION APPROACH TO THE TREATMENT OF TRAUMATIC CEREBRAL EMBOLISM
Larry Van Genderen and Charles L. Waite 25 Mar. 1968 14 p refs
(SMRL-519; AD-670613)

The study compares the conventional Navy recompression treatment tables and the newer rapid recompression-high pressure oxygenation (RR-HPO) method for the treatment of traumatic cerebral air embolism. Seven cases are presented. These cases occurred as a result of submarine escape training at the Naval Submarine Base, Groton, Connecticut, and were successfully treated with the latter method. Factors regarding the rationale of the use of this new approach are discussed. Since the writing of this paper, the Navy Department has approved the treatment schedules recommended herein for the treatment of traumatic air embolism. Author (TAB)

N68-31387# Naval Personnel Research Activity, San Diego, Calif.
AN EXPERIMENT IN BASIC AIRBORNE ELECTRONICS TRAINING. PART 5: EVALUATION OF THE REVISED COURSES
Robert O. Baldwin and Kirk A. Johnson Jun. 1968 21 p refs
(NPRA-STB-68-10; AD-671185)

This is the fifth in a series of studies on shortened versions of the Avionics Fundamentals and Aviation Electronics Technician R (Radar) Courses. The first four studies indicated that the initial revisions of the courses led to substantial savings in training time, but that the graduates from the revised courses were slightly inferior to graduates from the original courses on several criteria. It was decided that shortened versions of both courses should be implemented on an operational basis, but that these courses should incorporate certain changes that had been suggested by experience with the first revisions. These changes led to courses that were not quite as short as those produced in the first revision. The current study is an evaluation of the second revisions. Author (TAB)

N68-31392# Japan Atomic Energy Research Inst., Tokyo.
STUDIES ON THE THYROID FUNCTION TESTS BY MEANS OF WHOLE BODY LINEAR SCANNING
Yosihiko Osiumi, Keiichi Matsuura, Hideyasu Kiyonari, Hisashi Kawanami, and Masataka Inakura Jun. 1968 16 p refs Transl. into ENGLISH from Nippon Acta Radiol., v. 26, no. 11, Feb. 1967 p 1462–1470
(NSJ-TR-120) CFSTI: $3.00

This study was combined by whole body linear scanning and ^{131}I-uptake in 1, 3, 6 and 24 hours respectively after oral administration of $Na^{131}I$. And it was studied how ^{131}I distribution in the body changed referring to time and thyroid function. The curve of whole body scanning has two remarkable peaks. One showing the amount of ^{131}I taken in thyroid gland is the area corresponding to thyroid gland. The other is recognized between xyphoid process and umbilicus, which means ^{131}I distributed in many organs such as stomach, liver, spleen, pancreas and small intestine. But it is considered that stomach plays the most important role for the account of the latter peak. The height and area of these peaks change referring to time and the changes are influenced by the condition of thyroid function. The relation between the area of these peaks and thyroid function was investigated. Consequently we confirmed that the peak recognized between xyphoid process and umbilicus showed exactly the condition of thyroid function in 6 hours after administration. Author

N68-31396# School of Aerospace Medicine, Brooks AFB, Tex.
MEASURING THE RADIOFREQUENCY FIELD STRENGTH OF IMPLANTED TRANSMITTERS Final Report, Sep. 1966–Feb. 1967
Henry Buchanan, Jere M. Phillips, Willis F. Moore, and Calvin R. Richter Mar. 1968 15 p refs Submitted for publication
(SAM-TR-68-33; AD-670516)

Radiofrequency (RF) signal strength measurements were made of small VHF transmitters in free-space and after abdominal implantation in rhesus monkeys. This was done to determine the extent to which RF energy is absorbed by the body tissue. All measurements were made in the 84 to 106 MHz frequency range using both horizontally and vertically polarized receiving antennas. Sixteen implants were evaluated in twelve animals. Data are presented in polar coordinate form giving distribution patterns of radiation field strength before and after implantation. Most of the transmitters showed only signal attenuation after implantation and no modification of field pattern. This indicated body tissue is transparent to 84 to 106 MHz electromagnetic energy. Author (TAB)

N68-31408# California Univ., Los Angeles. Radiology Dept.
USE OF CHROMOSOME ABERRATIONS TO ESTIMATE X-RAY AND GAMMA-RAY DOSE TO MAN
Amos Norman, Masao S. Sasaki, Richard E. Ottoman, and Robert C. Veomett Brooks AFB, Tex. School of Aerospace Med. Dec. 1967 24 p refs
(Contract AF 41(609)-2944)
(SAM-TR-67-112; AD-666713)

The frequency of chromosome aberrations in lymphocytes taken from the peripheral blood provides a useful measure of absorbed dose. The estimation of dose is affected by time in culture of the lymphocytes, by sampling error and sampling time, and by size, rate, distribution, and quality of radiation dose. Data on the effect of these variables are presented. Dose is estimated for five people accidentially exposed to ionizing radiation. Four appendixes give a detailed account of optimal technics for making chromosome preparations, the yields of aberrations as a function of dose in 50-hour and 72-hour cultures, and the yield of acentric fragments per dicentric. Author (TAB)

N68-31442# Texas Univ., Austin. Electrical Engineering Research Lab.
COMPARISON OF INSECTS' FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT ANGELS
M. S. Fowler and A. H. La Grone 24 Apr. 1967 18 p refs
(Grant NSF GP-2596)
(P-14)

An overview is presented on the literature search undertaken to determine the characteristics of insect flight. The data discussed include wind tunnel studies as well as field observations of flight speeds, flight ranges, and insect density in the atmosphere. Tabulated data show the continuous (cruising) speed, maximum speed over short distances, speed of flight, and range of flight and endurance of stockflies (Diptera), mosquitoes (Diptera), Buffalo gnats or black flies (Diptera), honeybee (Hymenoptera), and pomace fly or vinegar fly (Diptera). It was concluded: (1) Speeds at which insects are capable of flying plus measured wind speeds at dot

angel echo altitudes are consistent with radar observation of dot angel echo movement. (2) Altitudes at which insects were found in flight agree with altitudes at which dot angel echoes are normally found. (3) Insect flight endurance can easily account for the relatively long times that dot angels have been tracked. (4) Although the polarization characteristics of the insect body do not appear to be a usable way of identifying insects as dot angel echoes, insects must remain as prime candidates for the source of these echoes. M.G.J.

N68-31447# Library of Congress, Washington, D. C. Aerospace Technology Div.
ENGINEERING PSYCHOLOGY Surveys of Foreign Scientific and Technical Literature, 1966–1967
Alan Campbell 5 Jun. 1968 96 p refs
(ATD-68-34-108-2; AD-670510)

Contents: Problems in the education and training of scientific and technical personnel in the Soviet Union; Problems in the training of military personnel; Human operator performance; Instrumentation, configuration, and design; Group dynamics; Personnel selection and training; Measurement of aptitudes and other psychological characteristics; Pedagogy and programmed learning; Use of simulators and other training devices. TAB

N68-31454# Antioch Coll., Yellow Springs, Ohio.
ANTHROPOMETRY OF THE HUMAN EAR. A PHOTOGRAMMETRIC STUDY OF USAF FLIGHT PERSONNEL
Milton Alexander (AMRL) and Lloyd L. Laubach Wright-Patterson AFB, Ohio AMRL Jan. 1968 36 p refs
(Contracts AF 33(615)-1101; F33615-67-C-1310)
(AMRL-TR-67-203; AD-670869)

A technique was developed that enables precisely specified ear dimensions to be measured directly from PhotoMetriC slides. Summary statistics for each of the various ear dimensions are presented for a sample of 500 subjects randomly chosen from a total series of 2236 photographic slides collected during the 1957 Authropometric Survey of USAF Male Flying Personnel. Regression equations for predicting the various ear dimensions from Ear Length and Ear Breadth are presented. A complete intercorrelation matrix for all variables studied in this research is also shown. The reliability and objectivity of the technique are discussed. Author (TAB)

N68-31459*# Naval School of Aviation Medicine, Pensacola, Fla.
PREVENTION OF OVERT MOTION SICKNESS BY INCREMENTAL EXPOSURE TO OTHERWISE HIGHLY STRESSFUL CORIOLIS ACCELERATIONS
Ashton Graybiel, F. Robert Deane, and James K. Colehour 20 Jun. 1968 14 p refs
(NASA Order R-93)
(NASA-CR-96122; NAMI-1044) CFSTI: HC $3.00/MF $0.65 CSCL 06S

Four Navy enlisted men were exposed in a slow rotation room (SRR) by stepwise increases over a period of 16 days to a terminal velocity of 10 rpm. The fact that overt symptoms of motion sickness at 10 rpm were prevented solely by the incremental increases demonstrated that adaptive processes somehow inhibited irradiation of vestibular activity to cell assemblies in areas concerned in the genesis of symptoms. The SRR sickness observed in other subjects suddenly exposed to 10 rpm thus may result from failure of homeostatic processes, permitting such irradiation. The underlying processes therefore are clearly nonhomeostatic in nature and produce a nonhomeostatic state. The findings in the experiment have practical as well as theoretical implications. Author

N68-31466# Stanford Research Inst., Menlo Park, Calif.
INVESTIGATIONS OF LASER DAMAGE TO OCULAR TISSUES Final Report, 5 Apr. 1967–5 Feb. 1968
A. Vassiliadis, R. C. Honey, N. A. Peppers, H. C. Zweng, R. C. Rosan et al Mar. 1968 98 p refs
(Contract F33615-67-C-1752)
(AD-670852)

Results of experimental investigations to determine threshold levels for minimally-sized retinal lesions caused by neodymium long-pulsed and Q-switched lasers are presented. The experimental animals were rhesus monkeys. In addition, results of retinal damage due to Q-switched ruby, neodymium, and doubled neodymium lasers at suprathreshold energy levels are also presented. A report on histopathology of retinal injury caused by Q-switched lasers is presented. Observations on damage due to both ruby and neodymium lasers are discussed. The design and construction of a fundus reflectometer is described, and preliminary measurements of fundus reflectance of rabbit, rhesus monkey, and human subjects are reported. Results of an experimental investigation to determine threshold damage levels for a CO2 laser to rabbit corneas are given. Data for three exposure times are included. In addition, theoretical calculations based on a one-dimensional heat-flow model are reported, and comparison is made with the experimental results. Finally, some results on permanent corneal damage due to CO2 laser are reported. Author (TAB)

N68-31480*# Biotechnology, Inc., Arlington, Va.
EFFECT OF HEAT STRESS AND PROLONGED ACTIVITY ON PERCEPTUAL-MOTOR PERFORMANCE
Raymond E. Reilly and James F. Parker, Jr. Washington NASA Aug. 1968 58 p refs
(Contract NASw-1329)
(NASA-CR-1153) CSCL 06S

This study was concerned with the assessment of the effects of two stress conditions on 16 basic dimensions of perceptual-motor performance. Subjects were tested under conditions of heat stress (86°F effective temperature for a period of six hours) and prolonged activity (24-hour continuous activity, with two 2-hour rest periods). In general, perceptual-motor performance levels were well maintained under these stress conditions and there was essentially no change in performance effectiveness during the 24-hour period of prolonged activity. Under heat stress, oral temperature and pulse rate increased significantly, lending support to the inference of increased arousal. Under prolonged activity, no change was noted in oral temperature, pulse rate, or blood pressure. This was consistent with the general lack of change in the performance measures indicating this level of stress was well tolerated. The findings of this investigation demonstrate the usefulness of the integrated measurement system as a device for the study of human performance. Author

N68-31496# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
IDENTIFICATION OF IMAGES [OPOZNAVANIYE IZOBRAZHENIY]
V. S. Fayn 12 Sep. 1967 24 p Transl. into ENGLISH from Priroda (Moscow), no. 2, 1966 p 18-26
(FTD-MT-66-158; AD-671204)

An introductory discussion of a machines ability to identify images and respond to them in a manner similar to human behavior which is essentially a response to visual image identification. The need for such machine capability is evident when speed, accuracy, or volume of information is beyond human ability or when the information is located in places inaccessible to humans. Visual perception by a machine involves an infinity of manifestations. The machine must memorize every presented realization of a given class of objects and all other needed classes. The machine must memorize because it cannot learn to identify, but this requires an infinite memory which is impossible for a machine. Hence the field

of the automaton is limited to identifying regularities of images. Constant images, such as letters, are easy for the machine to identify. However, the problem of moving images, such as human faces, is more complex. Solution of such a problem can lead to solving other problems not related to images, e.g., identifying sounds of speech. TAB

N68-31501*# Sandia Corp., Albuquerque, N. Mex. Planetary Quarantine Systems Studies Div. 1741.
THE CHANCES OF RETRIEVAL OF VIABLE MICROORGANISMS DEPOSITED ON THE MOON BY UNMANNED LUNAR PROBES
Martin S. Tierney Aug. 1968 97 p refs
(NASA Order R-09-019-040)
(NASA-CR-96121; SC-M-68-539) CFSTI: HC $3.00/MF $0.65 CSCL 06M

An attempt was made to estimate the density of the bioburden of the moon resulting from unmanned lunar probes. Accordingly, models were developed which estimate lunar probe bioburdens at launch and upon contact with the lunar surface. For hard impacts, two possible mechanisms for disseminating microorganisms on the lunar surface are modeled: Dispersal in crater ejecta and dispersal on lunar probe fragments. The expected density of terrestrial microorganisms on the moon is calculated at the time of impact, and subsequent survival is investigated. Some estimates are made of the probability of retrieving a lunar sample containing terrestrial microorganisms deposited by unmanned lunar probes. Author

N68-31511# Joint Publications Research Service, Washington, D. C.
THE FEEDING OF COSMONAUTS IN SPACE FLIGHT
N. Radchenko 26 Jul. 1968 5 p Transl. into ENGLISH from Aviats. i Kosmonavt. (Moscow), no. 6, Jun. 1968 p 59–62
(JPRS-46002)

Food rations for space flights are discussed in general terms, and mention is made of diets consumed by cosmonauts and astronauts on previous manned flights of short duration. Nourishment and weight requirements of foodstuffs for flights of longer duration are noted, as is the determination of suitable species of algae, higher plants, and animals for use in a closed ecological system. M.W.R.

N68-31583# George Washington Univ., Alexandria, Va. Human Resources Research Office.
LEARNING THEORY AND RESEARCH PARADIGMS APPLIED TO TRAINING RESEARCH: SOME DISSONANCES
Eugene F. Mac Caslin and Eugene A. Cogan May 1968 9 p ref Presented at the Am. Psychological Assoc. Conv., Los Angeles, Sep. 1964 *Its* Profess. Paper 13-68
(Contract DA-44-188-ARO-2)
(AD-671060)

While the problems and methods of learning theory and training technology seem similar, they are in fact subtly different. Illustrations of dissonance are discussed, using the following natural but inefficient extrapolations from academic traditions: to test a training program, compare two candidate programs, to compare two training devices, hold SS, training time, and method constant; the problem of a training program is a special case of transfer of training; a single objective task analysis may be used for any of several research purposes; and training methods for psychomotor performance and sensory discrimination are the best investment of training research. Author (TAB)

N68-31591*# Aztec School of Languages, Inc., Acton, Mass. Research Translation Div.
HISTOLOGICAL DISTRIBUTION AND RETENTION OF LEAD, RADIOACTIVE SULFUR, AND RADIOACTIVE CALCIUM IN COMPACT BONE [DISTRIBUTION HISTOLOGIQUE ET RETENTION DU PLOMB, DU RADIOSOUFRE ET DU RADIOCALCIUM DANS L'OS COMPACT]
J. Vincent Washington NASA Aug. 1968 6 p refs Transl. into ENGLISH from Radioisotopes, Sci. Council for Africa S. of the Sahara Publ. no. 28 (Pretoria), 1957 p 41–45
(Contract NASw-1692)
(NASA-TT-F-11862) CFSTI: HC $3.00/MF $0.65 CSCL 06R

The pattern of deposition of new bone substance in dogs and monkeys is investigated by histological means with lead and by radiological means with X-rays and radioactive isotopes, including calcium-45. It is found that the new deposit is at first calcium-poor and then undergoes massive calcification, during which a radioactive isotope can be co-deposited. Some inferences with regard to uptake and both short-term and long-term retention of radioactive isotopes by the animal or human skeleton are drawn, and avenues for further research are mentioned. Author

N68-31645# Brookhaven National Lab., Upton, N. Y.
SOURCES OF FISSION NEUTRONS AND THEIR DOSIMETRY
Ralph G. Fairchild [1968] 14 p refs Presented at the Meeting of the Transplutonium Program Comm., Germantown, Md.
(BNL-12452; CONF-680420-2) CFSTI: HC $3.00/MF $0.65

Sources of spontaneous fission neutrons are listed, and their possible therapeutic use is discussed. Dosimetry of a californium-252 fission neutron source in a tissue-equivalent phantom is described. NSA

N68-31666# Battelle-Northwest, Richland, Wash. Pacific Northwest Lab.
HIT THEORY AND MICRODOSIMETRY
W. C. Roesch 1 Apr. 1968 13 p Presented at the 6th Ann. Radiation Res. Society Meeting, Houston, Tex.
(Contract AT(45-1)-1830)
(BNWL-SA-1753; CONF-680421-2) CFSTI: HC $3.00/MF $0.65

Hit theory and microdosimetry are discussed, and an illustration of their use in the study of the RBE problem is presented in an effort to describe radiation effects on biological systems. NSA

N68-31686# Arizona State Univ., Tempe.
A STUDY TO DETERMINE THE FEASIBILITY OF ESTABLISHING A NATIONAL PROGRAM FOR TRAINING SKILLED AVIATION PERSONNEL
Jul. 1967 33 p refs Prepared in cooperation with Office for Economic Development, Washington, D. C.
(PB-178076) CFSTI: HC $3.00/MF $0.65

The growth picture is based partly on the fact that aviation technology is, today, on the threshold of significant advances in a number of areas. These developments will open new passenger and airfreight markets and will result in significant increases in personal flying, as well as in productivity in commercial service. The increase in numbers and complexity of aircraft will also generate requirements for greater numbers of more highly skilled personnel. At a time when aviation is entering its greatest period of growth, a critical problem has developed with respect to availability of highly skilled personnel, particularly pilots and mechanics. This problem has been developing slowly since 1960. Author (USGRDR)

N68-31734# California Univ., Los Angeles. Dept. of Engineering.
AN ADAPTIVE APPROACH TO OPTIMUM SWITCHING CONTROL OF ARTIFICIAL ARMS
Amos Freedy, Luigi F. Lucaccini, and John Lyman Aug. 1967 22 p refs
(Contract V1005P-9779)
(TR-43; Rept.-67-47; PB-177824) CFSTI: HC $3.00/MF $0.65

The problems involved in adapting a 'bang-bang switching system for control of an externally-powered artificial arm are considered. Stability problems of the 'bang-bang' system were solved by designing and constructing an adaptive self-stabilizing subsystem. The overall system was simulated on an analog computer for control of one-dimensional movements. In a pilot study four subjects using manual control demonstrated that the system would reach stable operation. Author (USGRDR)

N68-31737# American Inst. of Biological Sciences, Washington, D. C.
THE STATUS AND POTENTIAL OF AQUACULTURE, PARTICULARLY INVERTEBRATE AND ALGAE CULTURE, VOLUME 1. PART 1: THE STATUS AND POTENTIAL OF AQUA CULTURE. PART 2: INVERTEBRATE AND ALGAE CULTURE
John H. Ryther and John E. Bardach May 1968 312 p refs Sponsored by the Natl. Council on Marine Resources and Eng. Develop.
(PB-177767) CFSTI: HC$3.00/MF$0.65

The report deals with the present status of aquaculture in the world today, with some remarks on its potential contribution to the war on hunger. The conclusion is that the practice of aquaculture may not only be greatly expanded, but also that its yields may be very appreciably increased through the use of modern science and technology. Existing techniques are already available for immediate application and quick return. Aquacultural practices were surveyed with respect to the different species of organisms in culture; the different countries of the world, with consideration given to climate, race, and economic development; and the different levels of intensity and technological sophistication which are in current use. For each example, as much information as possible was obtained on the basic biology and ecology of the organism in culture, the procedures and techniques employed in the practice, and yields and economics of the operation, if commercial. Sources of the information consisted of: (1) the published scientific literature; (2) unpublished reports; (3) correspondence; and (4) personal visits by the authors to the sites where aquaculture is practiced in the United States and in 10 other countries around the world. USGRDR

N68-31791# Federation of American Societies for Experimental Biology, Washington, D. C.
ANALYSIS OF FUNCTIONAL ORGANIZATION OF CONDITIONED AVOIDANCE REFLEXES
R. L. Gasanova [1968] 25 p refs Transl. into ENGLISH from Zh. Vysshei Nervnoi Deyatel'nosti Im. I. P. Pavlova (Moscow), v. 17, no. 3, 1967 p 451–458 In ENGLISH and RUSSIAN
(NS-59; PB-178055T) CFSTI: HC$3.00/MF$0.65

The object of investigation was the functional structure of temporary connection in avoidance reactions in dogs, namely, lifting the left foreleg, up to a definite height, first elaborated to electric stimulation of the right hindleg, and then to a distant conditioned stimulus. Four experimental series with extinction of the reaction were carried out: (1) with elimination of electrical stimulation; (2) in the course of elaboration of a similar reaction of the other leg; (3) extinction with reinforcement, when the elaborated movement did not relieve the dog of the current; (4) extinction of avoidance reaction of the foreleg, induced by direct electrical stimulation of the hindleg. Author (USGRDR)

N68-31793# System Development Corp., Dayton, Ohio.
HUMAN FACTORS DATA THESAURUS (AN APPLICATION TO TASK DATA) Final Report, 2 Jan.–31 Oct. 1967
Robert G. Oller Wright-Patterson AFB, Ohio AMRL Mar. 1968 71 p refs
(Contract F33615-67-C-1036)
(AMRL-TR-67-211; AD-670578)

This report describes how vocabulary and thesaurus techniques can be applied to a user-oriented computerized data handling system. An analysis is presented of the specialized problems associated with the development of vocabularies and rules for regulating their usage. The content of the report consists of glossaries of action verbs and nouns accompanied by appropriate rules of usage and cross-reference indexes of acceptable terms and their synonyms. All the terms contained in the vocabularies are clearly defined and are mutually exclusive. Care was exercised to avoid selecting terms that had restricted usage, so they would be useful in a wide range of aerospace systems. Consistency in meaning of terms and rules governing their usage will reduce confusion when indexing data and help maintain the users confidence in the data retrieved. The vocabularies and rules for usage should, with modifications, be applicable to any data base containing aerospace human factors data. Only limited additions should be required to the verb glossary to express any human actions associated with aerospace systems. Author (TAB)

N68-31808# School of Aerospace Medicine, Brooks AFB, Tex.
AN AUTOMATIC SYSTEM FOR THE INDIRECT DETERMINATION AND RECORDING OF HUMAN ARTERIAL BLOOD PRESSURE
James D. Rogge, William K. Brown, and Clay A. Brown Mar. 1968 20 p refs
(SAM-TR-68-25; AD-670515)

An automatic system for the indirect determination of human arterial blood pressure, as used in the Biodynamics Branch, USAF School of Aerospace Medicine, is described and compared with direct methods of measurement. The pressures recorded from the brachial artery by this system are not significantly different from direct measurements of arterial pressure obtained simultaneously. This degree of accuracy is probably related, in part, to the placement of the microphone under the upper half of the blood pressure cuff. With proper positioning of the microphone and the appropriate use of filters, the system will produce records free of artifact in the presence of environmental noise and vibration. This capability makes it useful in dynamic environments where the determination of arterial blood pressure is necessary. Author (TAB)

N68-31842*# Oregon State Univ., Corvallis.
MICROORGANISM STUDY: SYSTEMATIC DESCRIPTION AND KEY TO ISOLANTS FROM MEXICO Progress Report
W. B. Bollen 1 Jun. 1968 14 p Prepared for JPL
(Contracts NAS7-100; JPL-950783)
(NASA-CR-96135) CFSTI: HC$3.00/MF$0.65 CSCL 06M

This report identifies isolants from soils of Mexico. Of the seven isolants reported one, 250 Aa, is an actinomycete; the remaining six are bacteria. A dichotomous key and a list of the isolants and species designations precede the descriptive charts for each isolant. A photomicrograph for the one non-viable isolant, 250 Ba, is also included. The bacterial isolants are all species of the genera *Bacillus*. Isolant numbers 250 Bb, 251 Aa and 251 Ab are *Bacillus cereus*. Isolant numbers 250 Aa and 251 Bb are *B. subtilis*. The cultural characteristics and physiological tests for the three species of *B. cereus* are all the same. The two *B. subtilis* isolants varied in cultural characteristics, litmus milk reactions, hydrolysis of casein, and temperature relationships. Isolant number 251 Bb resembles *B. coagulans* in milk reactions and casein hydrolysis, although the remaining majority of characteristics are like *B. subtilis*. Author

N68-31875# Task Group DELTA, Norfolk, Va.
A SYNOPTIC VIEW OF THE NEED FOR VP AIRCREW MEMBER TRAINING OPTIMIZATION
May 1968 25 p refs
(DELTA-22; AD-670755)

The report outlines the need for clarification of the relationship between current and future aircrew training programs and performance requirements in patrol squadrons. It is proposed that a contract be granted for the review of all training phases of squadron aircrew personnel and of means to optimize this training.
Author (TAB)

N68-31881# Purdue Univ., Lafayette, Ind.
INCREASING FAILURE AND RESPONSE RATE IN COMPLEX DECISION MAKING
Siegfried Streufert May 1968 23 p refs
(Contract N00014-67-A-0226)
(TR-12; AD-670749)

The effect of increasing failure on response rate and its components in complex decision making was investigated. Data were collected in a simulated decision-making environment permitting integrated, retaliatory, and general unintegrated decision making by dyads. It was found that (1) integrated decision making first increases and then decreases as the failure levels of information which groups experience are increased; (2) general unintegrated decision making increases when failure reaches moderate levels; and (3) retaliatory decision making is not affected by failure induction. The total decision-making response rate generally follows the characteristics of the curve for the integrated decision-making component, although it is, of course, somewhat higher.
Author (TAB)

N68-31891# Bolt, Beranek, and Newman, Inc., Cambridge, Mass.
ON THE PSYCHOLOGICAL IMPORTANCE OF TIME IN A TIME SHARING SYSTEM
Jaime R. Carbonell, Jerome I. Elkind, and Raymond S. Nickerson Sep. 1967 30 p refs
(Contract F19628-68-C-0125; ARPA ORDER-627)
(BBN-1687; AFCRL-68-0120; SR-6; AD-670604)

One of the most important problems in the design and/or operation of a computer utility is to obtain dynamical characteristics that are acceptable and convenient to the on-line user. This report is concerned with the problems of access to the computer utility, response time and its effect upon conversational use of the computer, and the effects of the load on the system (and its fluctuations) upon the other aspects. Primary attention is placed upon response time. Some of the difficulties in its definition are pointed out through examination of the typical interaction process. It is concluded that rather than a single measure a set of response times should be measured in a given computer utility, in correspondence to the different types of operations requested. Next, it is tentatively assumed that the psychological value of short response times stems from a subjective cost measure of the users own time, largely influenced by the value of concurrent tasks being postponed. A measure of cost (to the individual and/or his organization) of the time-on-line required to perform a task might thus be derived. More subtle is the problem of the users acceptability is a function of the service requested (e.g., length of computation), and variability with respect to expectations due both to uncertainty in the users estimation and to variations in the response time originated by variable loads on the system. Author (TAB)

N68-31911*# Massachusetts Inst. of Tech., Cambridge.
A THEORY AND MODEL OF HUMAN LEARNING BEHAVIOR IN A MANUAL CONTROL TASK
Albert Ernest Preyss Washington NASA Aug. 1968 138 p refs
(Grant NsG-577)
(NASA-CR-1124) CFSTI: HC $3.00/MF $0.65 CSCL 05H

A theory is presented for the explanation of human learning behavior in a manual control task. In the performance of a psychomotor task, a human operator responds to sensory stimuli with limb movements. This psycho-physiological phenomenon is conceptualized herein as a single channel information processing system. A sensor, a decision center and an effector are the serially connected components of the system. In the decision center responses are selected from a set of possible alternatives. Stored in memory are apriori estimates of the probability that a specific response should be inforced at the moment of decision. Response selection is determined by a rule which takes the priors into account. Learning is effected by a revision of the priors based on the weighting of certain evidence. The model of human learning behavior is a computer program obtained from a translation of the theory into machine language. Model behavior is compared with subject behavior measured in a motor skill experiment performed at M. I. T.'s Man Vehicle Laboratory. Author

N68-31916# Royal Aircraft Establishment, Farnborough (England).
ON THE PROBLEM OF INFLUENCING SPONTANEOUS NYSTAGMUS BY MEANS OF DIMENHYDRINATE [ZUR FRAGE EINER BEEINFLUSSUNG DES SPONTANNYSTAGMUS DURCH DIMENHYDRINAT]
F. Krejci and H. Bornschein Apr. 1968 7 p *Transl. into* ENGLISH from Practica Oto-Rhino-Laryngol. (Germany), V. 17, 1955 p 337–342
(RAE-LIB-TRANS-1298) CFSTI: HC $3.00/MF $0.65

Electronystagmographic examination of the effect of large doses of dimenhydrinate (300 mg i.m.) on spontaneous nystagmus of various origin in 11 patients is described. Six out of seven cases of spontaneous nystagmus of labyrinthine origin showed a temporary suppression or diminution of the nystagmus, but no effect could be observed in four cases of nystagmus of central origin. The results are discussed in view of the uncertain mechanism of the action of this drug. Author

N68-31925# Naval Submarine Medical Center, Groton, Conn. Submarine Medical Research Lab.
MONAURAL LOUDNESS FUNCTIONS UNDER MASKING
Alan M. Richards 14 Feb. 1968 13 p refs
(SMRL-509; AD-670756)

Monaural sone functions are obtained for a no-noise condition and under five levels of masking noise, using the method of fractionation. This method precludes the use of both ears in obtaining such functions as has been the case with dichotic loudness *balance, and other related procedures. The obtained curves are* found to parallel previously found masked functions in one case, and in another to show a more rapid acceleration at low levels, but identical slopes above one sone. When the power function exponent of a 100-Hz tone is plotted against overall SPL of a masking noise, a power transformation is obtained, which parallels that found for speech-in-noise. Although no numerical calculations are presented, it appears that, above 60 dB of noise, the exponent grows as approximately the 0.16 power of the noise. Author (TAB)

N68-32030# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
SELF-REGULATION OF HIGHER NERVOUS ACTIVITY
A. A. Krauklis 6 Dec. 1967 299 p refs Transl. into ENGLISH of the book "Samoregulyatsiya Vysshey Nervnoy Deyatel'nosti" Riga, Izd. AN Latv. SSR, 1964 p 1–291
(FTD-HT-23-808-67; AD-669273)

Self-regulation of the nervous system by means of conditioned reflex reproduction of effector reactions advantageous for so-called compensatory reactions guarantees the conservation of an optimal regimen and adequate level of integration of higher nervous system activity in animals and, in particular, in man. The adequacy and *economy of these mechanisms in most connections depends on* the adaptive effectiveness of all psychic human activities. Therefore, the problem of improving and stabilizing the self-regulation of higher nervous activity is the basic physiological content of human

psychohygiene and psychoprophylaxis. In the present work the possible physiological mechanisms for the self-regulation of higher nervous activity are examined in animals and in man, as well as the significance of disturbances of these mechanisms in the function of internal organs. Author (TAB)

N68-32034# Library of Congress, Washington, D. C. Aerospace Technology Div.
FOREIGN SCIENCE BULLETIN, VOLUME 4, NUMBER 8 Monthly Review of Selected Foreign Scientific and Technical Literature
Aug. 1968 42 p refs

CONTENTS:
1. THE PRESENT STATUS OF RESEARCH IN TELEPATHY IN THE SOVIET UNION V. Mutschall p 1–12 refs (See N68-32035 19-05)
2. RECENT SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION I. Velinov p 13–23 refs (See N68-32036 19-05)

N68-32035# Library of Congress, Washington, D. C. Aerospace Technology Div.
THE PRESENT STATUS OF RESEARCH IN TELEPATHY IN THE SOVIET UNION
Vladimir Mutschall *In its* Foreign Sci. Bull., Vol. 4, No. 8 Aug. 1968 p 1–12 refs (See N68-32034 19-05)
The methods and results of early and recent Soviet theoretical and experimental research in telepathy are reviewed. Author

N68-32036# Library of Congress, Washington, D. C. Aerospace Technology Div.
RECENT SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION
Ivan Velinov *In its* Foreign Sci. Bull., Vol. 4, No. 8 Aug. 1968 p 13–23 refs (See N68-32034 19-05)
Recent Soviet experiments in telepathic communication are described and the results are analyzed by using methods and techniques within the framework of the information and communication theories. Author

N68-32043# Virginia Polytechnic Inst., Blacksburg.
THE EFFECT OF RANDOM INTERNAL MOTIONS ON THE ANGULAR ORIENTATION OF A FREE BODY WITH LIMIT CONTROL
John R. Davidson (Ph.D. Thesis) May 1968 92 p refs
The equations of motion for the spacecraft are solved to obtain a simple relationship between individual crew motions and the angular change in spacecraft orientation. For the majority of manned spacecraft, the angular changes about the three principal axes of inertia can be considered independent. The additive effect of many motions, considered random in frequency and magnitude, is found by treating the motion as a form of random walk. Solutions are obtained from the time required to reach predetermined maximum allowable angular deviation limits. If reaction control jets are used for stabilization, this time determines the frequency of firing and the fuel consumption rate. For relatively heavy spacecraft, the complete solution to the diffusion equation gives the time between control jet firing; this solution has a particularly simple form. For smaller spacecraft, where individual motions may cause a change in orientation which is several percent of the maximum allowable, additional solutions have been obtained using Markov chain matrix analysis. Author

N68-32078# Rockford Research Inst., Inc., Cambridge, Mass.
INDUCTIVE INFERENCE RESEARCH STATUS, SPRING 1967 Final Report
Raymond J. Solomonoff 1 Jul. 1967 70 p refs
(Grant AF-AFOSR-464-65)
(RTB-155; AFOSR-68-1283; AD-670907)
Prior research on four theories of inductive inference are brought current in the present report with informal demonstrations of the likelihood of their equivalence that provide a firmer theoretical foundation for them. Initial work dealt with prediction of discrete time series. A fairly easily generalized result is presented of the application of these methods to continuous phenomena. A minimal criterion is given that any model of induction must satisfy; the proposed models of induction appear to be the only ones that satisfy this criterion. The uncomputability of the induction methods, which is related to the unsolvability of the halting problem, is a necessary consequence of their satisfying this criterion. A general formalism for the task net problem is devised in which known heuristic search problems may be formulated, but the adequacy of the formalism remains to be tested. The applicability of induction theory to man-to-animal communication is discussed briefly. Author (TAB)

N68-32088# Pasadena Foundation for Medical Research, Calif. Laser Biology Lab.
EFFECT OF RUBY LASER ENERGY ON THE HUMAN IRIS
A. Ray Irvine, Jr., Donald E. Rounds, and Robert S. Olson Brooks AFB, Tex. School of Aerospace Med. Mar. 1968 13 p refs
(Contract F41609-67-C-0022)
(SAM-TR-68-34; AD-670864)
Excised rings of iridial sphincter muscle taken from recently enucleated human eyes were monitored for their contractile and tearing response after treatment with varying photon densities from a pulsed ruby laser. The response was linear between 0 to 26 J/sq cm. but variable above that energy density level. A comparison of this response with that of rings of hamster dorsal aorta suggested that the variability was due to iridial tissue damage. This hypothesis was supported with observations that the iris showed variable degrees of destruction after the sectioning of intact eyes exposed to a laser dose range between 28 and 2200 J/sq cm. These methods suggested that the threshold of ruby laser energy which would impair the functional activity of the iris was approximately ten times the damage threshold level for the human retina. Additional work was called for to evaluate the effect of iridial damage on visual acuity. Author (TAB)

N68-32100*# National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
A SIMPLE LABORATORY METHOD FOR REDUCTION OF RHYTHM AND RATE IN LARGE-SCALE MONITORING OF ELECTROCARDIOGRAM
James Roman, Fred M. Larmie (Northrop Corp., Edwards, Calif.), and Tulio R. Figarola (Lovelace Found., Edwards, Calif.) Washington Aug. 1968 15 p refs Prepared in cooperation with Northrop Corp. and Lovelace Found. Field Teams at Edwards, Calif.
(NASA-TN-D-4751) CFSTI: HC $3.00/MF $0.65 CSCL 06B
A laboratory system for rapid reduction of large amounts of continuously recorded ECG information has been developed. The system consists of 60-times-real-time playback device which generates one pulse for each cardiac cycle, appropriate signal conditioning and logic circuitry, and a counting and printing system. Practical means for culling out noisy information, at 60 times real time, are provided. In addition, modifications to the commercially available parts of the system have been made that significantly increase the reliability of diagnosis of ectopic events by the average investigator. Author

N68-32131# Johann-Wolfgang-Goethe-Universitat, Frankfurt Am Main (West Germany).
EXTRATERRESTRIAL, BIOPHYSICS, BIOLOGY AND SPACE MEDICINE

H. Buecker, ed. Bundesministerium Fuer Wiss. Forsch. Jun. 1968 365 p refs In ENGLISH and GERMAN 2d meeting held at Marburg, 9–10 Oct. 1968 Prepared jointly with Philipps-Univ. (BMwF-FB-W-68-30) CFSTI: HC$3.00/MF$0.65

Conference papers are presented on the NASA bioscience program, radiation problems, extraterrestrial experiments, chemical evolution and exobiology, and aerospace medicine. For individual titles, see N68-32132 through N68-32154.

N68-32132*# National Aeronautics and Space Administration, Washington, D. C.

THE BIOSCIENCE PROGRAMS OF NASA

Orr E. Reynolds *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 19–42 (See N68-32131 19-04)

CSCL 06C

A program outline with representative examples is presented of basic research related to biological space exploration, research and development of flight experiments, and actual flight experiments. Mentioned are features of such projects as the radioisotope probe Gulliver, the Wolf Trap probe, and the Biosatellite program. K.W.

N68-32133# Arbeitsgruppe Biophysikalische Raumforschung, Frankfurt am Main (West Germany).

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE [AKUTE UND CHRONISCHE STRAHLENGEFAEHRDUNG DES MENSCHEN IM EXTRATERRESTRISCHEN RAUM]

H. Buecker *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 43–70 refs In GERMAN (See N68-32131 19-04)

Galactic radiation, the radiation of the Van Allen belt, and solar corpuscular radiation are analyzed in terms of dosimetry and radiation protection for astronauts. Doses below 100 mrad/24 hrs are expected from galactic radiation, while the Van Allen belt radiation will at times exceed 220 rad/hr. Even greater doses must be expected from solar flares. Depth of radiation penetration, distribution in the human body, shielding requirements, and best launching dates for minimum radiation exposure are studied. Transl. by K.W.

N68-32134# Hamburg Univ. (West Germany). Strahlenbiologisches Institut.

BIOLOGICAL EFFECTS OF QUANTA IN THE GEV RANGE [ZUR BIOLOGISCHEN WIRKUNG VON QUANTEN IM GEV BEREICH]

Hans A. Kuenkel, Fritz Staehler, and Friedrich Zywietz *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 71–80 In GERMAN (See N68-32131 19-04)

Electron synchroton irradiation experiments were conducted in the energy range from 2 to 6 GeV. In preliminary dosimetry experiments, readings with a duplex dosimeter with a thin-walled ionization chamber were compared with those of a quantum meter and with extinction measurements on irradiated ferrosulfate samples. Also measured were the build-up effect, depth of penetration, and dependence on quantum energy. The biological irradiation experiments were performed with dormant seeds and germinated seedlings of *Vicia faba*. The rate of mitosis was determined as a function of dosis and length of exposure. It was found that the biological effect of photon irradiation in this energy range is not as strong as that of conventional X rays. Particularly noted was a greater capacity for recovery after exposure to high-energy quanta and a strong build-up effect in deep layers of the material. Transl. by K.W.

N68-32135# Philipps-Universitat, Marburg (West Germany). Institut fuer Strahlenbiologie und Medizinische Isotopenanwendung

RADIATION DOSIMETRY IN SPACE WITH TISSUE-EQUIVALENT DETECTORS [ZUR STRAHLENDOSIMETRIE IM WELTRAUM MIT GEWEBEAEQUIVALENTEN DETEKTOREN]

H. Krueger and E. H. Graul *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 81–89 refs In GERMAN (See N68-32131 19-04)

Theory and construction of an experimental tissue-equivalent spherical proportional counter for determining the dosis-equivalent of mixed radiation in space is described. The composition of the counter's material closely resembles that of muscle tissue: 35.22% $C_6H_{11}ON$, 16.06% carbon, 45.14% polyethylene, and 3.58% CaF_2. The sphere is filled with a gas mixture of 32.4% CO_2, 3.4% N_2 and 64.2% CH_4 Accuracy of the counter and the calibration with a Po 210 source are briefly described. Transl. by K.W.

N68-32136# Kernforschungsanlage, Juelich (West Germany). Institut fuer Botanik und Mikrobiologie.

EFFECT OF X-RAYS ON MICROCOCCUS DENITRIFICANS [DER EINFLUSS VON ROENTGENSTRAHLEN AUF MICROCOCCUS DENITRIFICANS]

Bernhard Muetze *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 91–99 In GERMAN (See N68-32131 19-04)

Micrococcus denitrificans were exposed to X rays in the heterotrophic and autotrophic state and under aerobic and anaerobic conditions. Observed were the rate of mitosis, viability, metabolism, the hydrogenase system, the nitroreduction system, electron transport, growth, and deformation. Transl. by K.W.

N68-32137# Johann-Wolfgang-Goethe-Universitat, Frankfurt am Main (West Germany).

DEVELOPMENT OF AN EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT UP TO READINESS FOR FLIGHT [DIE ENTWICKLUNG EINES EXTRATERRESTRISCHEN BIOLOGISCHEN EXPERIMENTES BIS ZUR FLUGREIFE]

Robert G. A. Lotz *In its* Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 101–113 refs In GERMAN (See N68-32131 19-04)

An experiment involving *Hirudo medicinalis* is used to demonstrate the problems encountered by a biologist in designing and developing a scientific experiment for inclusion on a biological satellite. Details are discussed concerning the design of the probe and the closed ecological system, including oxygen supply, feeding, removal of excretion, temperature and pressure control, sterilization, bioinstrumentation, and telemetry. Transl. by K.W.

N68-32138# Arbeitsgruppe Biophysikalische Raumforschung Frankfurt am Main (West Germany).

STUDIES OF THE BEHAVIOR OF BIOLOGICAL OBJECTS IN VACUUM AND ULTRAHIGH VACUUM [ZUM VERHALTEN BIOLOGISCHER OBJEKTE IM VAKUUM UND IM ULTRAHOCHVAKUUM]

Horst Buecker *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 115–134 refs In GERMAN (See N68-32131 19-04)

The significance of vacuum and ultrahigh vacuum studies with biological objects is discussed with reference to studies of the possible existence of life in the universe, sterilization and contamination, radiation effects in space, and the vacuum mechanism affecting biological objects. Theories concerning the evolution, survival, and transfer of life in space are analyzed, including the possibility of escape of microorganisms from earth. Results are presented of vacuum chamber experiments in which mass spectrometric measurements and water vapor desorption data were obtained of *Bacillus subtilis* and *Bacterium E. coli*. Also shown is

an ultrahigh vacuum chamber specifically designed for biological experiments. Transl. by K.W.

N68-32139# Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E. V., Darmstadt (West Germany).
STUDIES ON THE PROBLEM OF THE PANSPERMIA [UNTERSUCHUNGEN ZUM PROBLEM DER PANSPERMIE]
Ehrenfried Petras *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 135–142 refs In GERMAN (See N68-32131 19-04)

The panspermia theory is critically analyzed in view of recent developments in space travel and exploration. Conditions for survival of microorganisms inside of meteorites during interstellar travel and during free travel due to radiation pressure are discussed. Various theories and experimental findings are evaluated concerning the survival of microorganisms in ultrahigh vacuum and at low temperatures. The effects of weightlessness and UV radiation are assessed. Transl. by K.W.

N68-32140# Gottingen Univ. (West Germany). Institut fuer Mikrobiologie.
GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA [WACHSTUMSPHYSIOLOGIE NEUER STAEMME VON KNALLGASBAKTERIEN]
H. G. Schlegel and R. Lafferty *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 143–152 refs In GERMAN (See N68-32131 19-04)

Greater synthesis efficiency is the chief advantage of the gas electrolysis–bacteria system over the photosynthesis–green algae system for the regeneration of breathing air and human wastes at a permanent lunar station. However, the H_2-oxidizing bacteria system lags behind in development. This paper reviews three parallel research programs aimed at conditioning the bacteria for carbon dioxide and gas electrolysis for the synthesis of organic materials: (1) isolation of new types of H_2-oxidizing bacteria such as pseudomona and mycobacteria; (2) the further development of culture techniques for oxyhydrogen gas bacteria; and (3) the application of mutation techniques to obtain productive mutants. Transl. by K.W.

N68-32141# Gottingen Univ. (West Germany). Institut fuer Mikrobiologie.
UTILIZATION OF ORGANIC NITROGEN COMPOUNDS BY HYDROGENOMONAS SPECIES [VERWERTUNG ORGANISCHER STICKSTOFFVERBINDUNGEN DURCH HYDROGENOMONAS-ARTEN]
Heinrich Kaltwasser *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 153–160 refs In GERMAN (See N68-32131 19-04)

The equations for the basic chemical processes in a culture of oxyhydrogen gas bacteria are discussed in connection with an outline of an electrolytically supplied culture system for the regeneration of breathing air using water and energy to release oxygen and absorb carbon dioxide. The problem of nitrogen regeneration for reuse in the nutrient solution is analyzed, and several experiments with species of *hydrogenomonas* are described which sought to establish whether or not these bacteria are able to use the regenerated substances. Transl. by K.W.

N68-32142# Deutsche Versuchsanstalt fur Luft- und Raumfahrt, Bad Godesberg (West Germany). Institut fuer Flugmedizin.
WEIGHTLESSNESS SIMULATION BY RAPID ROTATION AND ITS EFFECTS ON VARIOUS ORGANISMS [SCHWERELOSIGKEITSSIMULATION DURCH RASCHE ROTATION—IHR EINFLUSS AUF VERSCHIEDENE ORGANISMEN]
W. Briegleb *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 161–176 refs In GERMAN (See N68-32131 19-04)

Experiments are discussed which were conducted to determine the tendency of the contents of microorganisms to settle in one direction under the effect of gravity. The experiments were performed in a rotating, oil-filled simulator. Observed were growth, shape, and any indications of deformation in tests involving *Chlorella pyrenoidosa*, cultures injected in agar-agar, on the direction of creep of strands of *Phormidium autumnale*, and on *Tribolium castaneum* eggs, larva, and adults. Transl. by K.W.

N68-32143# Max-Planck-Institut fur Biophysik, Frankfurt am Main (West Germany).
A UV RADIATION SOURCE FOR BIOLOGICAL EXPERIMENTS IN SIMULATION CHAMBERS [EINE UV-STRAHLENQUELLE FUER BIOLOGISCHE UNTERSUCHUNGEN IN SIMULATIONSKAMMERN]
W. Voelker *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 177–182 In GERMAN (See N68-32131 19-04)

The characteristics of a mercury injection lamp for the simulation of radiation effects in a biophysics laboratory are briefly described. Included are the spectra of several emissions obtained from this lamp with straight mercury injection and with additions of cadmium and a nitrogen atmosphere. Transl. by K.W.

N68-32144*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
CHEMICAL EVOLUTION AND THE ORIGIN OF LIFE
Cyril Ponnamperuma *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 183–195 (See N68-32131 19-04) CSCL 06C

A review is presented of experimental work which established that (1) the origin of the micromolecules or monomers, and (2) the condensation of the micromolecules into micromolecules or polymers capable of replication, could have occurred on the primordial earth before the appearance of life. The earth's primitive atmosphere and the energies available for the synthesis of organic compounds under primitive earth conditions are briefly discussed. Adenine was experimentally produced by using an electron beam to simulate potassium 40 with which methane, ammonia, and water were irradiated. Condensation reactions giving rise to polypeptides and oligonucleotides are described. K.W.

N68-32145# Max-Planck-Institut fur Biophysik, Frankfurt am Main (West Germany).
FORMATION OF AMINO ACIDS AND PEPTIDES BY RADIATION [BILDUNG VON AMINOSAEUREN UND PEPTIDEN DURCH STRAHLUNG]
K. Dose, S. Risi, and H. Rauchfuss *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 197–206 refs In GERMAN (See N68-32131 19-04)

As part of an evaluation of the concept of chemical evolution of life, the composition of the primitive atmosphere of the earth and possible sources of energy are discussed. Examples and experimental data are presented of radiochemical reactions resulting in the formation of amino acids and fatty acids and in the polymerization or condensation of amino acids to peptides and proteins. Transl. by K.W.

N68-32146# Bonn Univ. (West Germany).
BIOCHEMICAL STUDIES ON PROTEINOIDS (POLYANHYDRO-α-AMINO ACIDS) [BIOCHEMISCHE UNTERSUCHUNGEN AN PROTEINOIDEN (POLYANHYDRO-α-AMINOSAEUREN)]

G. Krampitz, T. Nakashima, S. Diehl, and W. Haas *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 207–222 refs In GERMAN (See N68-32131 19-04)

The purpose of these studies was to increase the understanding of the formation of oligopeptides or polypeptides (proteinoids) under prebiological conditions on earth. The work centered on the experimental production of synthetic polymers in the laboratory and on the characterization of these products. Composition, chemical structure, catalytic activities, and reactivity are reviewed for their role in enzymatic and metabolic processes. The use of these polymeric products as nutrients and as food for space crews is briefly considered. Transl. by K.W.

N68-32147# Max-Planck-Institut fur Biophysik, Frankfurt am Main (West Germany).

FORMATION OF NITROGEN-CONTAINING HETEROCYCLIC COMPOUNDS AFTER X-RAY EXPOSURE OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS [ZUR BILDUNG VON STICKSTOFFHALTIGEN HETEROZYKLEN NACH ROENTGENBESTRAHLUNG VON WAESSRIGEN LOESENGEN ALIPHATISCHER]

E. Hussmann *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 225–233 refs In GERMAN (See N68-32131 19-04)

A post-radiation mechanism is described which leads to the formation of heterocyclic compounds. This aftereffect was observed in the irradiation of aqueous aliphatic amine or amino acid solutions when UV-spectrophotometric examinations disclosed that the extinction of the solution changed long after the irradiation had ended. However, the extinction changes only if the structure of a part of the molecules changes due to one or more chemical reactions. The experiments were conducted with a lysine solution in the presence of oxygen. The role of this aftereffect in the formation of ketones and ketone acids was studied. Fluroescence-spectrophotometric studies were performed to verify the results. Transl. by K.W.

N68-32148# Philipps-Universitat, Marburg (West Germany). Institut fuer Angewandte Physiologie.

POSSIBILITIES FOR A CONTINUOUS CONTROL OF THE HUMAN OXYGEN SUPPLY [MOEGLICHKEITEN ZUR KONTINUIERLICHEN KONTROLLE DER SAUERSTOFFVERSORGUNG DES MENSCHEN]

D. W. Luebbers *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 235–247 refs In GERMAN (See N68-32131 19-04)

Indirect methods for controlling the oxygen supply of humans are reviewed which involve measurements in the oxygen-assimilation, oxygen-transport, and oxygen-intake systems. In the oxygen assimilation system, the discussion covers control of the redox condition of the respiration ferments, the local anoxia of individual organs, the metabolite concentration in tissues, and functional disorders of organs due to hypoxia as indicated in ECG, EEG, and psychological tests. Control of the oxygen transport in the blood by continuous photometric measurements on the skin and by polarographic measurement of the oxygen pressure in the capillary areas underlying the mucosa is discussed. Control of the oxygen intake system includes measurements of the composition of inhaled and exhaled air, O_2 consumption, respiratory quotient, and monitoring of the cardio-circulatory system. Transl. by K.W.

N68-32149# Philipps-Universitat, Marburg (West Germany). Institut fuer Strahlenbiologie und Medizinische Isotopenanwendung.

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR THE REGULATORY MECHANISM OF CALCIUM METABOLISM [ANALOGRECHNER—UNTERSUCHUNGEN AN EINEM MATHEMATISCHEN MODELL ZU DEM REGULATIONSMECHANISMUS DES KALZIUMSTOFFWECHSELS]

A. Habermehl and E. H. Graul *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 249–258 In GERMAN (See N68-32131 19-04)

This study was prompted by the calcium losses observed in astronauts following their participation in space flights. The model is a quantitative expression of the regulatory mechanism for keeping the serum calcium level constant. The mathematical interrelation of the functional structure of the calcium metabolism is outlined, and the corresponding differential equations are presented. Analog computer calculations were performed for a number of realistic abnormal situations in the calcium metabolism. Transl. by K.W.

N68-32150# Max-Planck-Institut fur Verhaltensphysiologie, Seewiesen uber Starnberg (West Germany).

THE EFFECT OF WEAK TERRESTRIAL ELECTRO-MAGNETIC RADIATION ON THE CIRCADIAN PERIODICITY OF MAN [DIE WIRKUNG SCHWACHER ELEKTRO-MAGNETISCHER STRAHLUNG IRDISCHEN URSPRUNGES AUF DIE CIRCADIANE PERIODIK DES MENSCHEN]

R. Wever *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol., and Space Med. Jun. 1968 p 259–266 refs In GERMAN (See N68-32131 19-04)

The circadian periodicity of human subjects was tested in two insulated underground bunkers, one of which was shielded against the effects of the static magnetic field. Individuals or groups were isolated in the two bunkers for periods from 3 to 6 weeks. During the period of isolation, all activities as well as temperature, urine samples, physiological, and psychological data were monitored. A tendency toward internal desynchronization was observed, and a relationship exists between activity and vegetative periodicity which appears to affect optimum performance. Recommendations are presented for the application of the findings to space travel. Transl. by K.W.

N68-32151# Max-Planck-Institut fur Verhaltensphysiologie, Seewiesen uber Starnberg (West Germany).

[INTER- AND INTRA-INDIVIDUAL DESYNCHRONIZATION IN AN IOSLATED GROUP [INTER- UND INTRAINDIVIDUELLE DESYNCHRONISATION INNERHALB EINER ISOLIERTEN GRUPPE]

E. Poeppel *In* Johann-Wolfgang-Goethe-Univ. Extraterrest. Biophys., Biol. and Space Med. Jun. 1968 p 267–274 refs In GERMAN (See N68-32131 19-04)

An experiment is described in which four male human subjects were isolated as a group for three weeks. Recorded were the periods of activity and rest, electrolyte concentration in urine, body temperature, and psychomotor tempo. Various socio-psychological tests and self-appraisals were also conducted. The spontaneous periodicity of the subjects was compared with the normal 24-hour-day rhythm, and the test data were evaluated for the ability of the individuals to live as a group. Transl. by K.W.

N68-32152# Johann-Wolfgang-Goethe-Universitat, Frankfurt Am Main (West Germany). Senckenbergisches Pathologisches Institut.

RHYTHMICAL DNA SYNTHESIS—A BIOLOGICAL PRINCIPLE [RHYTHMISCHE DNS-SYNTHESE EIN BIOLOGISCHES PRINZIP]

K. Huebner *In its* Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 275–283 refs In GERMAN (See N68-32131 19-04)

Histoautoradiography was used to study the temporal progression of compensatory and regenerative growth of tissue cells, particularly in kidneys. It was found that growth is not constant but progresses in an orderly rhythm. The temporary stoppage of blood circulation in kidneys resulted in a considerable increase in

the growth rate and a steep increase in the number of DNA-synthesizing cells. Periodically recurring peaks of growth at two-day intervals were observed in experiments with mice up to 94 days in which the skin of the mice was brushed with methylcholantrene. The cause for the rhythmic DNA synthesis remains unknown. Transl. by K.W.

N68-32153# Philipps-Universtitat, Marburg (West Germany). Institut fuer Arbeitsphysiologie und Rehabilitationsforschung.
RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE [RHYTHMOLOGISCHE PROBLEME DER RAUMFAHRTMEDIZIN]
G. Hildebrandt, P. Engel, and E. D. Voigt *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun 1968 p 285–303 refs In GERMAN (See N68-32131 19-04)

Test results and diagnostic findings are reviewed of numerous works related to the rhythmological aspects of space flight. Among the subjects covered are isolation experiments, desynchronization, disturbances of frequency and phase coordination, the circadian rhythm, and sleep–wake cycles, also discussed are factors affecting the metabolic and excretory functions, adaptation, and the capacity for physical work. Transl. by K.W.

N68-32154# Air Force European Central Aeromedical Services, Wiesbaden (Germany).
A PHYSIOLOGICAL SYSTEMS ANALYSIS OF STRESS-INDUCED TEMPORARY EYE MUSCLE DISORDER AND ITS SIGNIFICANCE FOR AEROSPACE TRAVEL [EINE PHYSIOLOGISCHE SYSTEMANALYSE VON STRESS INDUZIERTER VORUEBERGEHENDER AUGENMUSKELSTOERUNG UND DEREN BEDEUTUNG IN DER LUFT- UND RAUMFAHRT]
Leonard Michael Fenning *In* Johann-Wolfgang-Goethe-Univ. Extraterrest., Biophys., Biol. and Space Med. Jun. 1968 p 305–318 refs In GERMAN (See N68-32131 19-04)

The effects of rapid changes in atmospheric pressure, acceleration in three axial directions linearly and radially, hypoxia, fatigue, alcohol, and emotional stress on the visual performance of pilots are investigated. The interrelation of these stress factors with phoria changes and connections between blood pressure and phoria are clarified in a hypothetical physiological system analysis. Results are also presented of experimental studies in pressure chambers on the causes of phoria changes. Transl. by K.W.

N68-32163*# North American Rockwell Corp., Downey, Calif. Space Div.
A STUDY OF MISSION DURATION EXTENSION PROBLEMS Summary Report, 1 Oct. 1966–1 Oct. 1967
Roy B. Carpenter, Jr. 15 Dec. 1967 44 p
(Contract NAS2-4214)
(NASA-CR-73239; SID-67-478-4, V. 4) CFSTI: HC $3.00/MF $0.65 CSCL 05E

Characteristics, constraints, and implications of extended duration space missions were investigated by applying an availability concept to mission/system design. Feasibility of this availability concept was demonstrated, and it was found that much of the required hardware is already available and nearly qualified. The operational concept is considered to exert a pronounced influence on mission success and crew safety. Maintenance and repair in space was found to be both feasible and desirable, and unscheduled maintenance and repair work load requirements to support critical systems are considered to be low. Chance of extravehicular maintenance action is expected to be less than 1 in 1000, and chance of more than 260 maintenance and repair actions during a two-year period expected to be less than 1 in 100. Spares weight decrement for unscheduled maintenance is estimated at about 900 lb. The module/assembly is considered the optimum level for most maintenance and replacement actions, and required maintenance can be accomplished within expected downtime constraints. M.W.R.

N68-32256 Washington Univ., Seattle.
HUMAN TEMPERATURE REGULATION: DYNAMIC CHARACTERISTICS OF METABOLIC RESPONSE
George Lesiie Brengelmann (Ph.D. Thesis) 1967 202 p
Available from Univ. Microfilms: HC $9.25/MF $3.00 Order No. 67-14154

Responses of human subjects to acute cold exposure were studied with the goal of quantitative description of the relationship between input variables and metabolic response, specifically including dynamic behavior. Subjects were exposed in a water bath. Bath temperature was varied in various temporal patterns chosen to bring dynamic properties to light. Oxygen consumption, meatus and rectal temperatures and bath temperature were monitored continuously. Results indicate that rate of change of skin temperature, dT_s/dt, is an important input which interacts with skin temperature and internal temperature to determine metabolic rate. This interaction is complicated by various nonlinearities particularly a threshold skin temperature involved with incorporation of dT_s/dt in control of metabolism. Dissert. Abstr.

N68-32259 Brandeis Univ., Waltham, Mass.
AUDITORY EFFECTS OF VISUAL REARRANGEMENT: INTERSENSORY CONFLICT AS A FACTOR IN ADAPTION
Jerold Herbert Rekosh (Ph.D. Thesis) 1967 144 p
Available from Univ. Microfilms: HC $6.80/MF $3.00 Order No. 67-16572

Compensation for displaced vision is considered from the viewpoint of a condition in which an artificially induced conflict between separate, but typically correlated channels of sensory information is created. Resolution of this conflict is considered necessary to restore normal sensory-motor performance. An hypothesis is developed that such resolution should require changes in intersensory relationships and the resulting compensation for the visual displacement should affect all other sensory modalities which contribute to spatially oriented behavior. This hypothesis is tested for the case of visual-and auditory relations. Subjects walked about while wearing laterally—displacing wedge prisms under two conditions of auditory stimulation, normal and attenuated. Before and after this exposure, visual and auditory direction-finding were measured. A series of experiments using this basic method led to the following results regarding the functioning of auditory-motor behavior during adaptation to visual rearrangement. Dissert. Abstr.

N68-32309 Ohio State Univ., Columbus.
THE NATURE OF INFORMATION LOSS IN THE VISUAL PREPERCEPTUAL SYSTEM
Michael Thomas Turvey (Ph.D. Thesis) 1967 59 p
Available from Univ. Microfilms: HC $3.00/MF $3.00 Order No. 67-16343

The present experiments explored further the nature of the visual preperceptual system (VPrS) in terms of the operative dimensions of storage and the nature of information loss. Experiment I was performed to assess the contention that an auditory code, phonemic in nature, evidenced at the postperceptual level was not operative at the preperceptual level. Stimulus materials were 3 x 5 letter matrices presented to *S* for a 50 msec. duration. The cue for retrieval was received by *S* 300 msecs. after the display terminated. Experiment II was conducted to verify the observation of a spatial code in the VRrS and to determine whether or not the information loss occurs with respect to this code. The protocol and displays of Experiment I was used with three delay intervals of 0 msec., 300 msec., 700 msec. A two-phase analysis of the data verified the existence of spatial dimensions of storage and revealed that as accuracy of retrieval decreased over time dimensional

error-production systematically increased with omissions and other error-production remaining invariant. Experiment III, utilizing a new sample of 8 Ss and 3 x 5 digit matrices replicated this observation. It was concluded that visual preperceptual information is stored in spatial dimensions and that this spatial information decays systematically as a function of time in store. Dissert. Abstr.

N68-32407# Institute for Perception RVO-TNO Soesterberg (Netherlands).
THE NON-EXPERIENCE OF DURATION DURING A CHOICE REACTION TASK
John A. Michon [1968] 13 p refs
(IZF-1968-10; TDCK-50905) CFSTI: HC$3.00/MF$0.65

Short interruptions of up to 0.4 sec in the active processing of information may remain unnoticed in subjective experience of duration. In the two experiments reported it is shown that such interruptions actually affect time estimation in a way which is predicted by the cognitive theory of time perception. Author

N68-32424*# Naval School of Aviation Medicine, Pensacola, Fla.
SCREENING OF SQUIRREL MONKEYS (SAIMIRI SCIUREUS) FOR VESTIBULAR FUNCTION STUDIES
Makoto Igarashi, Ashton Graybiel, and F. Robert Deane 9 May 1968 14 p refs
(NASA Order R-93)
(NASA-CR-96199; NAMI-1042) CFSTI: HC $3.00/MF $0.65 CSCL 06C

The study was undertaken to learn the incidence of unrecognized otological disease in young, healthy squirrel monkeys (*Saimiri sciureus*) maintained under optimum laboratory conditions. No definite pathological changes were found in the middle ears of 20 out of 22 ears examined. Morphologically, all inner ear end organs appeared normal. All threshold caloric test values were within the normal range. No significant variance was noted among the trials. Six out of eleven squirrel monkeys were not susceptible to motion sickness on repeated trials in the slow rotation room. Thus, the lack of susceptibility to motion sickness does not necessarily reflect pathologic suppression of semicircular canal function. Author

N68-32427*# Alabama Agricultural and Mechanical Coll., Normal.
RADIATION EFFECTS ON THE METABOLISM OF PHOSPHOLIPIDS IN THE CENTRAL NERVOUS SYSTEM OF ALBINO RATS: EFFECTS OF X-RAYS ON SPHINGOMYELIN BIOSYNTHESIS IN BRAIN AND SPINE MITOCHONDRIA OF ALBINO RATS Progress Report, 1 Jul. 1967–31 Aug. 1968
Charlotte O. Lee Aug. 1968 43 p refs
(Grant NGR-01-001-003)
(NASA-CR-96228; PR-5) CFSTI: HC$3.00/MF$0.65 CSCL 06R

The effect of x-rays on the biosynthesis of the phospholipid, sphingomyelin, in brain and spinal cord mitochondria has been studied. Mitochondria were isolated from male rats, irradiated and incubated with precursors of sphingomyelin. Sphingomyelin was isolated from the reaction mixture as alkali stable phospholipid. Identification of sphingomyelin was accomplished by infrared spectra, thin layer chromatography, and phosphorus determinations. Spinal cord mitochondria appeared to be the best source of ceramide transferase for sphingomyelin synthesis. X-irradiation caused an increase in sphingomyelin from both spinal cord and brain mitochondria. Moderate doses of x-rays caused a destruction of the carbonyl function of myristaldehyde. Author

N68-32429 National Lending Library for Science and Technology, Boston Spa (England).
DARK AND PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF THE PORPHIN SERIES [TEMNOVYE I FOTOKHIMICHESKIE REAKTSII GIDRIROVANIYA DEGIDRIROVANIYA SOEDINENII RYADA PORFINA]
A. N. Sidorov Feb. 1968 25 p refs Transl. into ENGLISH from Akad. Nauk SSSR (USSR), 1966 p 267–282
(RTS-4318) Available from Natl. Lending Library, Boston Spa, Engl.: 40s

The biogenesis of chlorophyll and its analogues by photosynthesising organisms and the part played by pigments in the process of photosynthesis cannot be understood without a detailed study of the chemical and photochemical properties both of chlorophyll itself and of the whole class of compounds to which chlorophyll belongs–the porphin class. Studies of these properties are a necessary stage on the way toward the control of processes of natural photosynthesis and the evolving of artificial photosynthesising models. This paper examines the reactions of hydrogenation and dehydrogenation of molecules of compounds of the porphin series. These include the hydrogenation of one or two pyrrole rings, which leads to the formation of the corresponding chlorins or bacteriochlorins. A particular case of such reactions is the conversion of protochlorophyll to chlorophyll. Author

N68-32451# Chemical Lab. RVO-TNO, Rijswijk (Netherlands).
AIR REGENERATION IN SEALED ENVIRONMENTS, A LITERATURE SURVEY [LUCHTZUIVERING IN GESLOTEN RUIMTEN. EEN LITERATUUROVERZICHT]
P. Sluimer Mar. 1968 40 p refs In DUTCH; ENGLISH Summary
(TDCK-50963; Rept.-1968-2) CFSTI: HC$3.00/MF$0.65

A literature survey is given for systems for air regeneration. Attention was paid mainly to pure chemical systems. Electrochemical and biochemical systems are dealt with only briefly. Special attention was given to combined sources of oxygen evolution and carbondioxide absorption. A comparison of several systems concerning weight, volume and heat evolution has been made. Author

N68-32506 National Lending Library for Science and Technology, Boston Spa (England).
THE PROBLEM OF PSYCHOLOGICAL FACTORS OF THE DIRECTION OF THINKING IN THE PROCESS OF SOLVING PROBLEMS [K VOPROSU O PSIKHOLOGICHESKICH FAKTORACH NAPRAVLENNOSTI MYSHLENIYA V PROTSESSE RESHENIYA ZADACHI]
N. L. Eliava Feb. 1968 8 p refs Transl. into ENGLISH from Psikhologicheskii Issled. im A.S. Prangishvili (USSR), 1966 p 200–205
(RTS-4098) Available from Natl. Lending Library, Boston Spa, Engl.: 15s

Psychological factors underlying the direction of thinking during problem solving were investigated in two experiments that required the subjects to group stories according to difficulties associated with the actual procedure of classification, and according to difficulties which arose in connection with the work done in preceding stages. In both cases the set formed in the subject's immediate past was apparent in his further activity. Experimental data indicated that sudden change in the relation of the subject to the reading text was accomplished with the participation of a psychological activity on the basis of which the thinking process changed its direction. In the theory of the set this activity was represented as the concept of the act of objectivation. G. G.

N68-32510 National Lending Library for Science and Technology, Boston Spa (England).
THE MODELLING OF CERTAIN PROCESSES OF PHYSIOLOGICAL ADAPTION OF AN ELECTRONIC COMPUTER

S. N. Braines and V. B. Svechinski Apr. 1968 17 p refs Transl. into ENGLISH from Eksperim. Khirur I Anesteziol. (Moscow), v. 9, no. 5, 1964 p 9–17
(RTS-4419) Available from Natl. Lending Library, Boston Spa, Engl.: 20s

Algorithms for optimal regimes of physiological adaptation processes are developed by optimizing the human homeostatic system. Mechanisms of the lines of action in the nervous system are classified and their algorithms and structures obtained by analyses of the biological structures and the links between them. An algorithm of seeking the optimal regime on a computer is formulated by a program that consists of the following three parts: (1) determination of control action; (2) calculation of the results of the action; and (3) maintenance and change of the value of the iota-associated elements. G.G.

N68-32519# Rhode Island Univ., Kingston.
FLOW OF HEAT AND VAPOR THROUGH COMPOSITE PERM-SELECTIVE MEMBRANES UNDER SIMULATED CONDITIONS Final Technical Report, Jan. 1967–Jan. 1968
Ferdinand Votta, Jr. 1968 38 p
(Contract DAAG17-67-C-0061)
(TR-68-44-CM; AD-671681)

An experimental study was made of the heat and mass (water vapor) flow rate through several different composite clothing systems. Cooling of a simulated skin surface was obtained through vaporization of water from a wet wick in the clothing system. Tests were conducted at both reduced and at atmospheric pressure. In the reduced pressure tests, cooling rates as high as 182 Btu/(hr. x sq.ft.) were obtained with a simulated skin temperature of 91F. Excellent control of the simulated skin temperature at widely varying heat flow rates was possible. Temperature control was obtained by controlling the wick vaporization pressure. Both forced and natural convection were used in the atmospheric pressure tests. Forced convection was obtained by blowing air from a large fan across the surface of the clothing systems. The air velocity was approximately 7 ft./sec. While the heat flow rate depended somewhat upon the temperature and the humidity of the room air which were not controlled in these tests, the results indicated that high cooling rates were possible. For a simulated skin temperature of 91F, cooling rates as high as 200 Btu/(hr. x sq. ft.) for forced convection and 121 Btu/(hr. x sq. ft.) for natural convection were obtained, with room air. Author (TAB)

N68-32573 California Univ., Los Angeles
SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY
Robert Philip Borofka (Ph.D. Thesis) 1967 124 p
Available from Univ. Microfilms: HC $6.00/MF $3.00 Order No. 67-14250

A measurement technique has been developed which is suitable for measuring the degree of polarization of different parts of a visual task. This measuring concept is suitable for easy field use under a diversity of lighting conditions and types of tasks. For a given task three photographs are taken through a linear polarizer, angularly oriented in three different directions; specifically, horizontal, vertical, and at 45°. Microdensitometer measurements of selected positions in the three resulting images can allow the degree of polarization to be determined for the corresponding locations in the scene. The interdependencies of the various measurement parameters are developed and the effects of errors analyzed. The constructional aspects are also given for the physical system used to verify the performance of the measuring technique. The computer program used for data processing is described and the results provided for a variety of task measurements. Dissert. Abstr.

N68-32581 National Lending Library for Science and Technology, Boston Spa (England).
ELEMENTS OF A GENERAL THEORY OF CONTROL IN THE BODY [ELEMENTY OBSHCHEY TEORII UPRAVLENIYA V ORGANISME]
S. N. Braines and V. B. Svechinsky Mar. 1968 7 p refs Transl. into ENGLISH from Eksperim. Khirur. i Anesteziol. (Moscow), v. 8, no. 5, 1963 p 3–8
(RTS-4420) Available from Natl. Lending Library, Boston Spa, Engl.: 15s

Closed processes of control, referred to as local processes, were investigated in relation to the autoregulation in complicated biological systems. The general structure for the control of physiological processes in the living organism is considered to be a system with three interconnected levels. The local systems are at the lowest levels, the second level controls the system of homeostasis for the general condition of the internal environment of the body, and the highest level changes the activities of the control level because of external environmental conditions. Various schematics are presented to show the interrelationships between these three levels, and the effects of autoregulation by cells and intracellular mechanisms is emphasized in the overall control process of the body. This general discussion considers a hypertensive disease to indicate malfunction of body controls. M.W.R.

N68-32582 National Lending Library for Science and Technology, Boston Spa (England).
ORGANISING ACTIVITY IN TIME PERCEPTION [VOSPRIIATIE VREMENI I USTANOVKA]
K. D. Mdivani Feb. 1968 14 p refs Transl. into ENGLISH from Psikhologicheskie Issled. in A.S. Prangishvili Tbilisi (USSR), 1966 p 114–121
(RTS-4099) Available from Natl. Lending Library, Boston Spa, Engl.: 20s

Human reactions were compared for two durations of light signals presented by an automatically timed electrotachistoscope in order to study any organizing activity in time perception. Ninety-nine psychologists and students were asked to compare the duration of 8 sec and 2 sec flashes on the tachistoscope screen; and, after 10 or 15 such trials, the subjects were asked to compare two flashes of equal (5 sec) duration. A strong illusion of contrast was exhibited by 44 subjects, a weak illusion by 27, an assimilative illusion by 17, and no illusion by 11. Each act of perception is considered the result of the mechanism representing a complete interdependence of the experience of the subject and the actual data; and the reaction to the outside stimulus is evaluated and reassessed by the subject according to his experience. M.W.R.

N68-32659# Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex.
THE RELATION BETWEEN EARDRUM FAILURE AND BLAST-INDUCED PRESSURE VARIATIONS
Clayton S. White, I. G. Bowen, and Donald R. Richmond Aug. 1967 64 p refs
(Contract DA-49-146-XZ-372)
(DASA-2064; AD-671618)

In field and laboratory experiments designed to study overall blast effects, incidental observations were made of the ears of over 490 animals. Those inside structures were exposed to a variety of atypical blast waves. Those located inside shock tubes or in the open when high explosives were detonated were exposed to fairly typical wave forms. An attempt was made to relate the incidence of eardrum rupture to various elements of the measured pressure-time curves. The association was not the same for typical and atypical wave forms. Within the limits of the meager differences were noted and discussed with emphasis on the apparent wide variability in tolerance for which an explanation was proposed. Author (TAB)

N68-32664 National Lending Library for Science and Technology, Boston Spa (England).
MODERN IDEAS ON THE STRUCTURE OF CELL MEMBRANES [SOVREMENNOE PREDSTAVLENIE OF STRUKTURE KLETOCHNYKH MEMBRAN]
V. L. Borovyagin Apr. 1968 32 p refs Transl. into ENGLISH from Tsitologiya (Moscow), v. 9, no. 5, 1967 p 505–523
(RTS-4481) Available from Natl. Lending Library, Boston Spa, Engl.: 40s

Presented is a review of current research on the molecular structure of cell membranes. Cited are studies of the chemical composition of biomembranes; the structure of myelin sheaths of axons; the structure of the outer segments of photoreceptors; lipid and lipoprotein models of membranes; transverse sections of cell membranes using electron microscopic techniques; the dimensions of cell membranes; granular and globular types of organization of cell membrane components; the probability of the existence of a globular type of lipid organization in living cell membranes; and the structure of extra-cellular and cytoplasmic layers of biomembranes. It is concluded that although different cell membranes consist of different chemical components having a different spatial organization from that of the monolayer envisaged in the hypothetical model of molecular organization of biomembranes proposed by Davson and Danielli, the majority of experimental data obtained directly support the common principle of organization stipulated in the Davson–Danielli model, i.e., the biomolecular palisade of lipid molecules linked on both sides by their polar groups with the globularly organized monolayers of non-lipid components. S.C.W.

N68-32695# New Mexico State Univ., University Park.
BEHAVIORAL ANALYSIS OF AUDITORY FUNCTIONING IN PRIMATES Final Report, 1 Feb. 1967–31 Jan. 1968
James N. Allen, Leslie A. Dalton, Jr., Wendon Henton, and Henry L. Taylor May 1968 24 p refs
(Contract F29600-67-C-0029)
(ARL-TR-68-6; AD-671987)

An experiment was performed for the purpose of evaluating the usefulness of the technique of conditioned suppression of auditory threshold determination in rhesus monkeys. Nine rhesus (Macaca mulatta) monkeys were shaped to the lever in an operant conditioning experiment and trained until a stable rate of response on a variable interval 90 schedule was attained. At this point training in conditioned suppression was undertaken. The criterion of suppression used was a 90 percent or better ratio for 3 consecutive days. When criterion was reached, threshold testing was begun and continued until a range of dB levels which surrounded the 50 percent suppression ratio level was reached and maintained more or less stable for 3 days of testing. Stimuli in the region of the threshold were separated by 2 dB increments, and trials at each intensity level were presented several times in a non-systematic fashion. Threshold was defined as the dB level at which the line connecting the suppression ratios to the 2 dB apart stimuli crossed the 50 percent suppression ratio. The technique yields results which are remarkably stable over time and which are achieved with minimum difficulty. No other technique yet devised seems to be superior to conditioned suppression in any particular degree if ease of accomplishment and intra-organismic temporal stability are desired. Author (TAB)

N68-32707*# National Aeronautics and Space Administration, Washington, D. C.
AEROSPACE MEDICINE AND BIOLOGY A Continuing Bibliography with Indexes
Jul. 1968 150 p refs
(NASA-SP-7011(52)) CFSTI: HC$3.00/MF$0.65 CSCL 06S

Subject coverage concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects on biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. Each entry consists of a standard citation accompanied by its abstract. Author

N68-32733*# Naval School of Aviation Medicine, Pensacola, Fla.
INSTRUMENTATION FOR MEASUREMENT OF VESTIBULAR-SIGNIFICANT FORCES IN HELICOPTERS
W. Carroll Hixson and Jorma I. Niven 21 May 1968 17 p
(NASA Order R-93)
(NASA-CR-96296; NAMI-1043; AD-670230) CFSTI: HC $3.00/MF$0.65 CSCL 06B

The report describes an airborne instrumentation system developed at minimal cost from standard, commercially available components for the in-flight acquisition and storage of helicopter low-frequency motion data pertinent to the investigation of vestibular-related pilot disorientation. System components provided to measure and record the instantaneous triaxial linear acceleration and instantaneous triaxial angular velocity of the aircraft at a given crew station include three potentiometer readout linear accelerometers, three similar gimballess rate gyros, six signal-conditioning amplifiers, and a 7-channel, battery-powered, IRIG-compatible, magnetic tape recorder. Author (TAB)

N68-32734*# Naval School of Aviation Medicine, Pensacola, Fla.
A TRIAXIAL ACCELEROMETER MODULE FOR VESTIBULAR APPLICATION
W. Carroll Hixson 7 May 1968 17 p ref
(NASA Order R-93)
(NASA-CR-96298; NAMI-1040; AD-670231) CSCL 06B

A brief description is given of a 6-channel instrumentation module developed for collection of preliminary acceleration data for the a priori determination of optimal characteristics for transducers to be installed permanently on various aircraft and man-rated research devices for the measurement of vestibular-significant acceleration stimuli. The module utilizes three linear and three angular accelerometers, all of the standard, commercially available, servo type, to measure the triaxial linear and triaxial angular accelerations, along and about, respectively, the roll, pitch, and yaw axes of the test device or vehicle. Signal-conditioning amplifiers equipped with feedback circuitry to facilitate in-flight adjustment of gain and high-frequency rolloff characteristics are provided for optimal utilization of the dynamic range capabilities of magnetic tape data storage recorders. Though the instrument is used primarily to collect acceleration data in the 0-5 cps spectrum, the linear channels can also be used in determining vibration levels in the 0-100 cps range. Author (TAB)

N68-32747*# Techtran Corp., Glen Burnie, Md.
X-RAY DOSIMETER [DOSIMETRE A RAYONS X]
Washington NASA Aug. 1968 8 p Transl. into ENGLISH from French Patent No. 1035715, 1953 5 p
(Contract NASw-1695)
(NASA-TT-F-11906) CFSTI: HC$3.00/MF$0.65 CSCL 06B

The invention concerns dosimeters for measuring the intensity of the dose, or both, of X-or gamma rays administered to a body at a given location. The essential characteristic consists of a cell whose part sensitive to X-or gamma rays consists of a semiconducting layer or material, and in the fact that this cell is mounted in a suitable circuit for measuring variations of the resistance of this cell under X-or gamma radiation. Author

N68-32749# Bunker-Ramo Corp., Canoga Park, Calif.
EFFECTS OF FAILURE TYPE, FAILURE ALTITUDE AND AN EXPERIMENTAL PITCH TRIM AUGMENTATION UPON

MANDATORY GO-AROUND PERFORMANCE, PHASE 4 Final Report, 20 Oct.–3 Nov. 1967
C. A. Semple, S. B. Stewart, S. F. Barnebey, and D. E. Nichols Feb. 1968 43 p refs
(Contract FA-67-WA-1700)
(SRDS-RD-68-12; AD-671893)

Ten rated pilots flew 320 fully automatic Category III-C (zero visibility) approaches to landing in a simulator study designed to investigate mandatory go-around performance following control and display system failures at 70, 40, 30 and 20 feet of actual altitude. The utility of an experimental pitch trim augmentation condition which automatically resulted in a 0.25 degree per second pitch-up rate following autopilot failure or disconnect also was investigated. In order to explore the utility of a rollout steering command, one hundred and twenty additional automatic landings were also made, followed by manually controlled rollout to 60 knots. Touchdown performance also was examined. Based upon the severity of sink rates at touchdown, the study showed that automatic landing performance is slightly better than go-around performance when autopilot functioning is unimpaired by system failures. System survivability also was shown to be better if mandatory go-around rather than manually controlled touchdown followed autopilot failures. The experimental pitch trim augmentation also facilitated go-around performance not only by reducing the number of ground strikes but also by reducing the severity of sink rates at the time of ground strike. Although rollout performance was unsatisfactory, the rollout steering command proved promising. As a minimum, additional improvement in the composition of a rollout steering command signal would be required to make manually controlled instrument rollout practical. Author (TAB)

N68-32764 National Lending Library for Science and Technology, Boston Spa (England).
EFFECTS OF VARIATIONS OF DIET ON SECRETORY FUNCTION OF THE SMALL INTESTINE [SEKRETORNAYA FUNKTSIYA TONKOGO KISHECHNIKA PRI RAZLICHNYKH REZHIMAKH PITANIYA]
M. P. Stanets May 1968 5 p Transl. into ENGLISH from the book "Regulyatsiya Vegetativnykh Funktsii" Kiev, Izd. AN Urk. SSR, 1965 p 155–158
(RTS-4530) Available from Natl. Lending Library, Boston Spa, Engl.: 10s

An investigation was conducted to study the secretory function of the small intestine in association with four different patterns of food intake. Experiments were performed on young dogs which were subjected to various patterns of eating. The results are discussed in relation to changes in the amount of secretion by the small intestine, the enterokinase and phosphatase content, and changes in the sucrose content. It was concluded that a break in the customary sterotype by transferring the animal from one feeding pattern to any other pattern influences the secretory process in the small intestine. B.S.D.

N68-32800# Systems Research Labs., Inc., San Antonio, Tex.
CARDIOVASCULAR IMPLICATIONS OF SPACE TUMBLING: CONDITIONING, TRAINING, AND PROTECTION
S. T. Lim Brooks AFB, Tex. School of Aerospace Med. Apr. 1968 20 p refs
(Contract AF 41(609)-2897)
(SAM-TR-68-32; AD-671510)

Cardiovascular deconditioning occurs as a result of exposure to zero-gravity. Whereas cardiovascular deconditioning produced by water immersion can be prevented by pressure cuffs, and that produced by bed rest can be prevented by passive exercise, such measures are not effective against deconditioning due to space flight. The author suggests certain experiments to study response to tumbling by the conditioned cardiovascular system and by the deconditioned system. The theoretic pressure input resulting from human centrifugation is graphically represented. Tumbling is considered the short-radius spectrum of centrifugation. The concept of the hydrostatic indifference point is discussed in the light of the marked curvature of the pressure profile when the center of rotation is very near one end of the body and the parabolic form of the pressure curve when the center of rotation is within the body. Author (TAB)

N68-32814# Houston Engineering Research Corp., Tex.
MATCH-TO-SUCCESSIVE-SAMPLE-DEVICE SYSTEM WITH PAPER TAPE INPUT/OUTPUT UNIT Final Report
Gordon L. Wilson, A. H. McMorris, and E. G. Rogers Holloman AFB, N. Mex. Aeromed. Res. Lab. May 1968 29 p
(Contracts AF 29(600)-4003; AF 29(600)-5642)
(ARL-TR-68-4; AD-671985)

This technical report describes a special purpose, stored and wired program system for automatically administering match-to-successive-sample problems to primates, the Match-to-Successive-Sample Device (MSSD) system. The system uses visual and/or auditory stimuli for communication with the subject. Since the MSSD system is fully automatic, any number of consecutive problems with variable parameters can be administered without intervention from the experimenter. The input data for each problem are automatically recorded on punched cards or paper tape. In addition to automatically recording the input data, the MSSD system also records each response and indicates whether or not the response was correct. Positive and negative reinforcement are administered at the conclusion of each problem, depending on the reinforcement modes programmed by the experimenter. Author (TAB)

N68-32901# Joint Publications Research Service, Washington D. C.
LIFE SUPPORT OF SPACECRAFT CREWS
G. I. Voronin and A. I. Polivoda 12 Aug. 1968 216 p refs Transl. into ENGLISH from Mashinostr. (Kiev), 1967
(JPRS-46173)

A brief comparative analysis of the weight and power characteristics of the principal types of life support systems, including those with reserves of oxygen, water and food, those using physical and chemical air and water regenerators, those using autonomous power plants and radiation heat exchangers, is presented; also, systems are described with biosynthesis of food matter and simultaneous oxygen regeneration. The book presents a brief analysis of the principles of bioenergetics in its scientific and engineering aspects. Author

N68-32920# Federal Aviation Administration, Oklahoma City, Okla.
THE SPIRAL AFTEREFFECT: INFLUENCE OF STIMULUS SIZE AND VIEWING DISTANCE ON THE DURATION OF ILLUSORY MOTION
William E. Collins and David J. Schroeder May 1968 9 p refs
(FAA-AM-68-10)

This study examined some effects of stimulus size and distance on the persistence of one type of illusory motion, viz., the spiral aftereffect (SAE). Duration of SAE was investigated with stimuli of 2, 4, 8, 12, 14, and 16 inches in diameter. The distance between the observers and the rotating spirals was varied to produce visual angles between 1°12′ and 18°56′ of arc. Data indicate that the duration of illusory motion reaches peak values between approximately 2°–4° of visual angle. Author

N68-32943# Battelle-Northwest, Richland, Wash. Pacific Northwest Lab.
CHARACTERISTICS OF TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETERS

G. W. R. Endres Jan. 1968 22 p refs Presented at the Symp. on Personnel Radiation Dosimetry, Chicago, 30 Jan.–1 Feb. 1967
(Contract AT(45-1)-1830)
(BNWL-741; CONF-670115-2) CFSTI: HC $3.00/MF $0.65

The characteristics of thermoluminescent teflon–lithium fluoride finger rings for personnel dosimetry are investigated. The discs require a minimum of handling, do not need processing before readout, and may be loaded in normal room light without inducing spurious readings. The relatively flat energy response eliminates the necessity for making large corrections when working with low energy radiation sources. And generally, the measurements are more accurate than those obtained using film. NSA

N68-32973*# Minnesota Univ., Minneapolis.
DEVELOPMENT AND EVALUATION OF AN IMPEDANCE CARDIOGRAPHIC SYSTEM TO MEASURE CARDIAC OUTPUT. DEVELOPMENT OF AN OXYGEN CONSUMPTION RATE COMPUTING SYSTEM UTILIZING A QUADRUPOLE MASS SPECTROMETER
W. G. Kubicek, D. A. Witsoe, R. P. Patterson, M. A. Mosharrafa, J. N. Karnegis et al Jul. 1967 185 p refs
(Contract NAS9-4500)
(NASA-CR-92220) CFSTI: HC $3.00/MF $0.65 CSCL 06B

A four electrode impedance plethysmographic system was developed which apparently monitors left ventricular output. Two band electrodes were placed around the subject's neck, a third band around the thorax at the level of the xiphisternal joint, and the fourth around the lower abdomen. The upper neck electrode and the abdomen electrode were excited by a 100 kHz constant sinusoidal current and the resultant voltage (impedance) changes occurring with the cardiac cycle were monitored from the inner two electrodes. Stroke volume was calculated from the impedance change information using a formula relating impedance changes to volume changes in a conducting solid. A comparison study with simultaneous impedance and dye dilution measurements under rest and exercise conditions was carried out on 10 healthy young adult males. Results indicate that the impedance method predicts relative changes (ratios) in cardiac output with an accuracy of ± 16 percent with 95 percent confidence. Author

N68-32994# Air Proving Ground Center, Eglin AFB, Fla. Human Factors/Biomedical Div.
HUMAN FACTORS/BIOMEDICAL SAFETY CONSIDERATIONS FOR NEODYMIUM LASERS
Charles V. Durham Jun. 1968 26 p refs
(APGC-TR-68-53; AD-671993)

This guide was developed as an aid to personnel using neodymium laser systems. It contains both a brief discussion of the characteristics of laser systems in general, and a more detailed review of the neodymium, doped laser and associated hazards. Specific recommendations are made in regard to the safe operation of the neodymium laser during ground and airborne operations. Author (TAB)

N68-32995# School of Aerospace Medicine, Brooks AFB, Tex.
TECHNIC AND APPLICATIONS OF FLUORESCENCE ANGIOGRAPHY IN AEROSPACE OPHTHALMOLOGY
William A. Newsom and Thomas J. Tredici Mar. 1968 10 p refs
(SAM-TR-68-21; AD-671532)

Fluorescence angiography is used by personnel in the Ophthalmology Branch, USAF School of Aerospace Medicine, to evaluate ocular problems. It has diagnostic value in evaluating patients with various intraocular pathologies. It can be used to study the progression and pathophysiology of retinal and choroidal conditions, such as arterial serous retinopathy, intraocular tumors, diabetic retinal changes, etc. The potential uses of this technic as a tool in research extends to other types of stress as they affect retinal circulation. Author (TAB)

N68-33005*# Stanford Research Inst., Menlo Park, Calif.
A PRELIMINARY STUDY OF THE AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
Jerome S. Lukas and Karl D. Kryter Washington NASA Sep. 1968 74 p refs
(Contract NAS1-6193)
(NASA-CR-1193) CFSTI: HC $3.00/MF $0.65 CSCL 05E

Results of experiments on the startling and awakening effects of sonic booms are presented. The objectives were to: (1) build and test a device and associated room where one could simulate the effects of sonic booms on a room in a house, and (2) conduct studies of the effects of the simulated indoor booms on people sleeping and performing manual tasks. The tentative findings are based on a study of a small, homogeneous group of subjects. Author

N68-33009*# Boeing Co., Philadelphia, Pa.
SUBJECTIVE RESPONSE TO SYNTHESIZED FLIGHT NOISE SIGNATURES OF SEVERAL TYPES OF V/STOL AIRCRAFT
Ernest G. Hinterkeuser and Harry Sternfeld, Jr. Washington NASA Aug. 1968 98 p refs
(Contract NAS1-7083)
(NASA-CR-1118; D8-0907A) CFSTI: HC $3.00/MF $0.65 CSCL 05E

The acoustical signatures of various types of V/STOL aircraft sized for 60 passengers and a 500 mile range were analytically predicted, and tape recordings synthesizing these sounds were prepared. Test subjects listened to these sounds and compared their annoyance with that of a jet airplane. Perceived noise levels were calculated, and the levels which produced equal annoyance to the jet were determined. Each aircraft was analyzed to determine the distance it must maintain from observers in order not to exceed the annoyance of the jet airplane during terminal and flight operations. A second analysis was made to identify the noise reduction required for each aircraft in order to operate at specified distances at a specified level of annoyance. The aircraft studied were helicopters, fan lift, jet lift, and tilt wing VTOL and a turbofan STOL. Author

N68-33037# Library of Congress, Washington, D. C. Aerospace Technology Div.
SOVIET RADIOBIOLOGY
E. Fortunatow 10 Jun. 1968 94 p refs
(ATD-68-105-108-9; AD-671436)

Contents: Space oriented radiobiology; Genetic aspects of radiobiology; Radioprotective measures; Effects of radiation combined with other spaceflight factors; Non space-oriented radiobiology; Biological effects of magnetic, electromagnetic, and electric fields. TAB

N68-33066*# Oregon State Univ., Corvallis.
SYSTEMATIC DESCRIPTION AND KEY TO *STREPTOMYCES* ISOLANTS FROM CHILE, MEXICO AND ARIZONA DESERT SOILS Progress Report
W. B. Bollen and Sumie Nishikawa 19 Aug. 1968 100 p refs Prepared for JPL
(Contracts NAS7-100; JPL-950783)
(NASA-CR-96470) CFSTI: HC $3.00/MF $0.65 CSCL 06M

Thirty-six isolants from Chile, Mexico or Arizona desert soils have been examined. Of these, eighteen have been classified, four are in the process of being identified and will be described in the next report. The remaining fourteen isolants have failed to grow in tryptone–yeast extract broth at 26°, thioglycollate broth at 7, 26, and 37°C, trypticase soy broth at 26°C, upon

tryptone–glucose–yeast extract agar at 7, 26, and 37°C, trypticase soy agar at 26°C, soil extract agar at 7, 26, and 37°C, glucose nutrient agar, malt extract agar, starch agar, and sodium albuminate agar at 26°C. Author

N68-33067# Federal Aviation Administration, Oklahoma City, Okla. Physiology Lab.
CONTRIBUTION OF ACTIVITY TO THE CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
Vincent Fiorica, Mary Jo Burr, and Russell Moses Mar. 1968 8 p refs
(AM-68-4)

Eight subjects were maintained on a standard dietary regimen ingested every four hours for 120 hours. Measurements of the magnesium and calcium excretion in these subjects revealed a circadian periodicity with maximal levels of excretion for both ions occurring during the sleeping hours (2200–0600) and minimal levels occurring during the mid-day (1000–1400). Further studies on the effects of activity (exercise) on the excretion of magnesium and calcium demonstrated a marked decrease during and following exercise accompanied by no significant change in the plasma concentrations of the two ions. These data suggest that the periodicity in excretion reported here reflects an activity cycle generated by alternate periods of sleeping and waking and may not represent an endogenous rhythm of magnesium and calcium excretion. Author

N68-33093*# Cornell Aeronautical Lab., Inc., Buffalo, N. Y.
SOME EFFECTS OF Y-AXIS VIBRATION ON VISUAL ACUITY Final Report, Jul. 1966–Nov. 1967
L. Rubinstein and R. Kaplan Wright-Patterson AFB, Ohio AMRL Jun. 1968 29 p refs
(NASA Order T-55353; Contract AF 33(615)-5279)
(NASA-CR-96466; CAL-VH-2298-B-1; AMRL-TR-68-19) CFSTI: HC $3.00/MF $0.65 CSCL 05E

Four experiments were conducted to measure vernier visual acuity during sinusoidal vibration of the head in the y-axis (side to side). In one half of each experiment peak acceleration amplitude was held constant at 1.0 G_y; in the other half, displacement amplitude was held constant at 0.03 cm. Frequency was the main independent variable. Experiments 1 and 2 examined the effects of vibrating the head at frequencies ranging from 13 to 78 Hz. The combined results from these experiments showed that in both the constant acceleration and the constant displacement conditions acuity is a U-shaped function of frequency and has a minimum in the frequency range of 26 to 34 Hz. Experiment 3 examined the effects of vibrating the target. Decrements in acuity due to target vibration were smaller than those due to head vibration under comparable conditions. Experiment 4 examined the effects of vibrating the head using procedures similar to those in experiments 1 and 2 except that the orientation of the vernier target with respect to the axis of vibration was changed from perpendicular (i.e., vertical) to parallel, (i.e., horizontal). No differences were found between the acuity scores produced by the vertically and horizontally oriented targets, for either the constant displacement or the constant acceleration condition. Author

N68-33128# Aerospace Medical Div. Aerospace Medical Research Labs. (6570th), Wright-Patterson AFB, Ohio.
EFFECT OF SODIUM FLUORIDE AND AMOX (NF30) ON GROWTH AND THYROID FUNCTION IN THE RAT Final Report, Mar.–May 1967
Ethard W. Van Stee Jan. 1968 17 p refs
(AMRL-TR-67-189; AD-671942)

Intact and thyroidectomized growing rats were treated daily for 60 days with thyroxine, potassium iodide, sodium fluoride, or NF3O, an oxidizing substance. Results indicated that treatment with NaF or NF3O at doses which were molar equivalents with respect to fluoride to a thyrotoxic dose of iodide had no effect on thyroid function measured by growth rate, 131 I-uptake, and adrenal weight. A sparing effect of thyroid on NF3O toxicity was suggested. Autho. (TAB)

N68-33241*# Massachusetts Inst. of Tech., Cambridge. Man-Vehicle Lab.
STUDIES OF HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY Status Report, Jun. 1967–Jun. 1968
L. R. Young and Y. T. Li Jun. 1968 41 p refs
(Grant NsG-577)
(NASA-CR-96290) CFSTI: HC $3.00/MF $0.65 CSCL 05H

The research topics are all concerned with transmission of orientation information to a man, his manual control process thereafter, and the resulting manual output. The research areas are thus classified according to presentation of information (display research), physiological sensor modeling (vestibular system and eye movements), manual control modeling, and output mechanisms (postural and neuromuscular control). Author

N68-33269# Joint Publications Research Service, Washington, D. C.
SPACE PLANT-GROWING
V. P. Dadykin 28 Aug. 1968 62 p refs Transl. into ENGLISH from Kosmich. Rasteniyevodstvo (Moscow), Biol. Ser. no. 1, 1968 p 1–64
(JPRS-46306) CFSTI: HC $3.00/MF $0.65

Possible ways of using terrestrial plants to support life during long space flights are considered. Human physiological processes are discussed in terms of daily dietary requirements, and average intake and output of substances. The factors involved in selecting the species to be used in developing higher autotrophic organisms for closed ecological systems are assessed, and hydroponic and aeroponic methods of plant cultivation are described. The importance of biological compatibility is stressed. M.G.J.

N68-33285# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
EFFECT OF IONIZING RADIATION AND DYNAMIC FACTORS OF THE FUNCTION OF THE CENTRAL NERVOUS SYSTEM; PROBLEMS IN SPACE PHYSIOLOGY (SELECTED ARTICLES)
15 Sep. 1967 28 p Transl. into ENGLISH from the book "Vliyaniye Loniziruyushchikh Izlucheniy i Dinamicheskikh Faktorov na Funktsii Tsentral'noy Nervnoy Sistemy; Voprosy Kosmicheskoy Fiziologii" Moscow, Izd. Nauka, 1964 p 92–102, 122–127, 162–181
(FTD-MT-24-142-67; AD-670253)

CONTENTS:

1. THE COMBINED EFFECTS OF VIBRATION AND ACUTE IRRADIATION ON THE FUNCTIONAL STATE OF THE VESTIBULAR APPARATUS OF GUINEA PIGS Z. I. Apanasenko p 1–7 (See N68-33286 20-04)
2. COMBINED EFFECT OF VIBRATION AND IONIZING RADIATION ON THE FUNCTIONAL STATE OF THE SPINAL REFLEX ARC M. A. Kuznetsova p 9–12 (See N68-33287 20-04)
3. THE EFFECT OF WHOLE-BODY VERTICAL VIBRATION AND X-RAYS ON THE NUCLEUS OF CELLS OF BONE MARROW CELLS OF MAMALS Yu. S. Demin p 13–27 (See N68-33288 20-04)

N68-33286# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.
THE COMBINED EFFECTS OF VIBRATION AND ACUTE IRRADIATION ON THE FUNCTIONAL STATE OF THE

N68-33287

VESTIBULAR APPARATUS OF GUINEA PIGS [KOMPLEKSNOYE DEYSTVIYE VIBRATSII I OSTROGO OBLUCHENIYA NA FUNKTSIONAL'NOYE SOSTOYANIYE VESTIBULYARNOGO APPARATA MORSKIKH SVINOK]

Z. I. Apanasenko *In its* Effect of Ionizing Radiation and Dyn. Factors of the Function of the Central Nervous System; Probl. in Space Physiol. 15 Sep. 1967 p 1–7 (See N68-33285 20-04)

Guinea pigs were first subjected to 15 min of vibration, then irradiated 20 to 30 min later with 500 r of gamma rays, and finally exposed to a second 15-min period of vibration 23 to 24 hr after irradiation. Peripheral blood, weight, temperature, and general clinical condition and viability of the animals were also monitored. The combined effects of exposure to vibration and gamma irradiation were found to increase the spontaneous electrical activity of the hind leg extensor muscles with the animals in a state of relative rest. Increase in the latent period of the myoelectrical reaction to vestibular stimulation following exposure occurs only shortly before the death of the animal. When animals are exposed to vibration and radiation, vibration always substantially modifies the effects of radiation on the nervous system. On the other hand, as far as composition of the peripheral blood, weight, and the general clinical condition and viability of the animals are concerned, no statistically significant differences between animals exposed to the effects of radiation alone was detected. Author

N68-33287# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.

COMBINED EFFECT OF VIBRATION AND IONIZING RADIATION ON THE FUNCTIONAL STATE OF THE SPINAL REFLEX ARC [KOMILEKSNOYE DEYSTVIYE VIBRATSII I IONIZIRUYUSHCHEGO IZLUCHENIYA NA FUNKTSIONAL' NOYE SOSTOYANIYE DUGI SPINNOMOZGOVOGO REFLEKSA]

M. A. Kuznetsova *In its* Effect of Ionizing Radiation and Dyn. Factors of the Function of the Central Nervous System; Probl. in Space Physiol. 15 Sep. 1967 p 9–12 (See N68-33285 20-04)

Guinea pigs were first subjected to 15 min of vibration then irradiated 30 to 40 min later with 500 r of gamma rays, and finally exposed to a second 15-min period of vibration 24 hr after irradiation. The combined effects of vibration and irradiation induced significant changes in the functional state of the defense reflex arc which were manifested as changes in the stimulation threshold and the length of the latent period of the reflex. In a number of cases, parabiotic phenomena appeared in response to stimulation of various magnitudes. Changes in the length of the latent period and the stimulation threshold were independent of each other. The combined effects of irradiation and vibration inducec a complex reaction which was sometimes dominated by vibration effects and sometimes by irradiation effects, while in other cases a summation of the effects of the two factors was observed. Author

N68-33288# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.

THE EFFECT OF WHOLE-BODY VERTICAL VIBRATION AND X-RAYS ON THE NUCLEUS OF CELLS OF BONE MARROW CELLS OF MAMMALS [DEYSTVIYE OBSHCHEY VERTIKAL'NOY VIBRATSII I RENTGENOVYKH LUCHEY NA YADRO KLETOK KOSTNOGO MOZGA MLEKOPITAYUSHCHIKH]

Yu. S. Demin *In its* Effect of Ionizing Radiation and Dyn. Factors of the Function of the Central Nervous System; Probl. in Space Physiol. 15 Sep. 1967 p 13 27 (See N68-33285 20-04)

Mice were subjected to 20 min of vertical vibration and irradiated with X-ray doses of 50 to 100 r. Four groups of mice were used. The first group was subjected to vibration alone and the second group was exposed to radiation alone. The third group was exposed to vibration followed 3 to 5 min later by irradiation, and the fourth group was exposed to irradiation followed 3 to 5 min later by vibration. It was found that vibration increases the number of mitoses in bone marrow cells. Most of the affected cells showed chromosome adhesions. The number of disturbed mitoses caused by the combined effects of vibration and irradiation did not exceed the number produced by the effects of radiation alone. However, some differences were noted in the types of changes encountered: exposure to combined factors increased the proportion of chromosome adhesions to chromosome aberrations. The mitotic activity picture in bone marrow exposed to a 50-r X-ray dose alone was similar to that produced by the combined effect of vibration and irradiation. Increasing the vibration frequency from 60 cps to 70 cps produced no statistically significant difference in the number of changes in mitotic activity. Author

N68-33296*# General Dynamics/Convair, San Diego, Calif.

FEASIBILITY STUDY OF A CENTRIFUGE EXPERIMENT FOR THE APOLLO APPLICATIONS PROGRAM. VOLUME 1: SPACE RESEARCH CENTRIFUGE CONFIGURATION, INSTALLATION AND FEASIBILITY STUDIES Final Report

B. D. Newsom et al 25 Mar. 1968 360 p refs

(Contract NAS1-7309)

(NASA-CR-66649; GD/C-DCL-68-001; SRC-AN-703) CFSTI: HC $3.00/MF $0.65 CSCL 06B

The feasibility of employing an orbital, onboard centrifuge to perform a series of physiological experiments with human subjects in space is examined. An initial trade-off study was employed to reduce the centrifuge and installation configuration to a single, well-defined baseline, and orbital spacecraft installations were evaluated. The candidate installations selected are the S-4B ground fitted station, an S-4B workshop cluster, and a CSM/LM; for compatibility, an 8.5 foot centrifuge radius is recommended. In analyzing the stability and control dynamics, the effect of spacecraft perturbation on the centrifuge experiment was considered, as well as vehicle stabilization. Comparison of experiment requirements with the spacecraft control capability indicates that sufficient stability can be achieved. The orbital centrifuge design criteria are identified as primary rotation, radius arm translation, couch pivot drive, couch roll drive, and couch translation and body adjustments. Feasibility data were also developed on reliability, failure mode and effects, safety, cost, weight, power, life support, and environmental control. The experiment is considered technologically feasible. M.G.J.

N68-33297*# General Dynamics/Convair, San Diego, Calif.

FEASIBILITY STUDY OF A CENTRIFUGE EXPERIMENT FOR THE APOLLO APPLICATIONS PROGRAM. VOLUME 2: SPECIFICATION AND TEST REQUIREMENTS SPACE RESEARCH CENTRIFUGE ENGINEERING DEVELOPMENT PROTOTYPE Final Report

1 Apr. 1968 165 p refs

(Contract NAS1-7309)

(NASA-CR-66650; GD/C-DCL-68-002; SRC-SD-604) CFSTI: HC $3.00/MF $0.65 CSCL 06B

General, subsystem, and test specifications are presented for developing the space research centrifuge engineering prototype. System level requirements are established for the detail design and fabrication of a ground-based prototype to support the T-010 experiments proposed for the Apollo Applications Program. This system will be used initially to develop mechanisms and control systems, and to verify the performance capabilities of prototype hardware. These data are to form the basis for developing the ground-based centrifuge into a man-rated test facility to evaluate physical tolerances, training requirements, and man–machine integration during the experiment definition phase. Design criteria are stated for the electrical instrumentation and control; subsystem specifications cover the drive hub and sensor, primary drive, counterbalance, radius arm translation drive, pivot drive, roll drive, and couch for one man occupancy in a shirt sleeve environment. Test procedures and reporting requirements are outlined. M.G.J.

N68-33298*# General Dynamics/Convair, San Diego, Calif.
FEASIBILITY STUDY OF A CENTRIFUGE EXPERIMENT FOR THE APOLLO APPLICATIONS PROGRAM. VOLUME 3: EXPERIMENTAL REQUIREMENTS FOR THE SPACE RESEARCH CENTRIFUGE Final Report
W. A. Johnson et al 1 Apr. 1968 137 p refs
(Contract NAS1-7309)
(NASA-CR-66651; GD/C-DCL-68-003; SRC-MS-112) CFSTI: HC $3.00/MF $0.65 CSCL 06B

The application of an onboard centrifuge for measuring human physiological responses in the space environment is examined. The centrifuge design is to be applicable to both the LM laboratory and the advanced workshop S-4B concepts. As the centrifuge provides the angular velocities and accelerations in one plane, the subject interfaces with the centrifuge by means of the couch-restraint system which provides the correct orientation, secondary angular velocities and accelerations, and the manipulations required to investigate the subjects' responses. The measurement instrumentation is to be incorporated into the couch assembly. The experiments are discussed in relation to couch positions, accelerations, type of restraints, degrees of freedom, and experimental instrumentation. They include the use of peripheral vision lights for studying grayout thresholds, therapeutic support, threshold levels of sensitivity for angular acceleration, tolerance to tilt simulation, cross-coupled semicircular canal stimulation, threshold levels of sensitivity to linear acceleration, and reentry simulation. Experiment feasibility is assessed in terms of spacecraft stability, reliability, safety, economics, weight, and power. M.G.J.

N68-33304*# Bolt, Beranek, and Newman, Inc., Cambridge, Mass.
THE HUMAN AS AN OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
Sheldon Baron and David L. Kleinman Washington Sep. 1968 76 p refs
(Contract NAS12-104)
(NASA-CR-1151; Rept.-1571) CFSTI: HC $3.00/MF $0.65 CSCL 05H

A mathematical model of the human operator in multivariable control tasks is developed by considering the human as a control and information-processing system. The model contains elements for describing the operator's inherent physiological limitations as well as his instrument-monitoring, data-reconstruction, and control behavior. Special emphasis is placed on the instrument-monitoring aspects of the model. The human's limitations are modelled by combining them into an equivalent perceptual time delay and an equivalent observation noise. The main assumption underlying the subsequent theoretical investigations is that the well-trained, well-motivated operator behaves in a near optimal manner, subject to the constraints imposed by the above limitations. Thus, the operator's control behavior is assumed to be that of an ideal feedback controller. The human's data-reconstruction process is chosen so as to obtain a "best" estimate of the state of the controlled element based on information obtained from "sampling" the various instruments. Author

N68-33333*# Johns Hopkins Univ., Baltimore, Md. School of Medicine.
BIOLOGICAL EXPERIMENTS IN SPACE. PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN AN ORBITING SATELLITE Final Status Report, Oct. 1963–Mar. 1968
Jorge Perez-Cruet Mar. 1968 211 p refs
(GRANT NsG-520)
(NASA-CR-96450) CFSTI: $3.00 CSCL 06S

Summary information is given on various experiments which were conducted to determine the possible effects of prolonged weightlessness on the neural control of cardiovascular functions. Methods and techniques for obtaining data on psychocardiovascular reactions under terrestrial laboratory conditions are detailed along with several models for the study of certain psychocardiovascular reactions. The physiological mechanisms mediating psychocardiovascular responses were explored by surgical removal of peripheral autonomic nerves and by pharmacological blockade of parasympathetic and adrenergic mechanisms. It was found that psychocardiovasuclar reactions depended on the integrity of these pathways. Mechansims mediating psychocardiovascular reactions are discussed in relation to experiments where the hypothalamus and other intracraneal areas were electrically stimulated. An assessment is also made of investigations in which the problem of inhibition of psychocardiovascular reactions was studied. B.S.D.

N68-33437*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
STUDIES OF PILOTING PROBLEMS OF ONE-MAN FLYING UNITS OPERATED IN SIMULATED LUNAR GRAVITY
Donald E. Hewes Aug. 1968 16 p refs Presented at the 2d Natl. Conf. on Space Maintenance and Extravehicular Activities, Las Vegas, Nev., 6–8 Aug. 1968
(NASA-TM-X-61164) CFSTI: HC $3.00/MF $0.65 CSCL 05E

Current interests in small flying units to extend the range capabilities of lunar explorers coupled with a serous lack of information on the flight behavior of such vehicles have stimulated a series of studies of the handling qualities and often piloting problems of this type of vehicle. This paper briefly reviews earlier experimental studies of small earth-based vehicles and illustrates several configurations that have evolved in recent preliminary design studies of possible small lunar flying devices. These configurations include backmounted, stand-up, and sit-down arrangements that are being, or soon will be, evaluated in the Langley studies made possible by the recent development of lunar gravity simulation techniques that permit the use of full-scale man-operated flying test-bed vehicles. The general nature of these fundamental studies as well as a few of the preliminary findings are described in this paper. Author

N68-33452*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
HUMAN WORK PERFORMANCE IN SPACE
Otto F. Trout, Jr. and Paul R. Hill [1968] 8 p Presented at the 2nd Natl. Conf. on Space Maintenance and Extravehicular Activities, Las Vegas, Nev., 6–8 Aug. 1968
(NASA-TM-X-61160) CFSTI: $3.00 CSCL 05H

Methods of manual performance of extravehicular and intravehicular work in space are being investigated by means of simulation techniques in order to develop locomotion and restraint aids, equipment design data, and manual task procedures. Simulation and flight experiences to date have provided insight into problem areas for application to maintenance, repair, and assembly tasks during space-flight operations. Author

N68-33479 Washington Univ., Seattle.
KINETIC ISOTOPE STUDIES ON THE INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET LIGHT
Mariano Tao (Ph.D. Thesis) 1967 123 p
Available from Univ. Microfilms: HC $6.00/MF $3.00 Order No. 67-14224

The effect of solvent on the inactivation of transforming deoxyribonucleic acid, tobacco mosaic virus, and its nulceic acid by ultraviolet irradiation has been investigated. The rates of inactivation of TMV-RNA at 253.7 and 300 mμ radiation in heavy water are lower than in light water. The ratio of the rate constants, K_{H2O}/K_{D2O}, is about 2 for 253.7 and 300 mμ radiation. Pyrimidine dimers and hydrates have been isolated from tritiated TMV-RNA irradiated in H_2O and D_2O at 253.7 mμ. The isolation procedures involve ezymic hydrolysis and paper and column

chromatography. The rates of formation of pyrimidine dimers in TMV-RNA irradiated in H_2O and D_2O are identical. This suggests that dimer formation is not affected by solvent. On the other hand, a deuterium isotope effect is observed for hydrate formation. The deuterium isotope effect observed for hydrate formation is about 2.2, which is comparable to that observed for the inactivation of TMV-RNA. Dissert. Abstr.

N68-33498# Battelle Memorial Inst., Richland, Wash. Pacific Northwest Lab.

EFFECT OF ATMOSPHERIC TRITIUM ON PHOTOGRAPHIC, THERMOLUMINESCENT AND RADIOPHOTOLUMINESCENT DOSIMETERS

Dale H. Denham and Ronald L. Kathren 20 Jun. 1968 10 p refs Presented at the Health Phys. Soc. Meeting, Denver, 16–20 Jun. 1968

(Contract AT(45-1)-1830)

(BNWL-SA-1569; CONF-680607-2) CFSTI: HC $3.00/MF $0.65

^{7}LiF thermoluminescent dosimeters, in teflon or as extruded rods, low Z radiophotoluminescent glass, and personnel monitoring film were exposed to 1, 4, 40 and 200 MPC (5, 20, 200, 1000 μCi/M^3) of tritiated water in air at 52% relative humidity. Neither the TLD nor RPL glass dosimeters responded to the tritium over an exposure range of 4 and 4800 MPC-hours. Hence, these dosimeters cannot be used as atmospheric tritium detectors nor is protection required if they are worn by personnel in tritium contaminated atmospheres. Personnel monitoring film was affected by atmospheric tritium with the response per unit exposure being concentration dependent for exposure times below about 200 hours. The use of film as a tritium dosimeter is contraindicated unless tritium concentrations are reasonably constant or the exposure is made over a long period of time. A heat sealed pouch of 0.005 inch polyethylene will adequately protect the film badges of workers in tritiated atmospheres. Author (NSA)

N68-33506*# Childrens Hospital Medical Center of Northern Calif., Oakland. Bruce Lyon Memorial Research Lab.

DIETARY FACTORS AFFECTING EXOGENOUS AND ENDOGENOUS SOURCES OF FAT AND CARBOHYDRATE FOR ENERGY PRODUCTION AND SYNTHESIS Annual Progress Report, 1 Oct. 1967–30 Jun. 1968

S. Abraham and Mildred J. Bennett 1968 25 p refs

(Grant NGR-05-059-001)

(NASA-CR-96422) CFSTI: HC $3.00/MF $0.65 CSCL 06A

As a basis for assessing the effects of long duration space flight stress on astronauts, studies on rats were conducted to determine: the effects of diet composition on total fatty acid (TFA) content and changes in fatty acid composition of liver, adipose tissue, and carcass; the activities of enzymes related to fat and carbohydrate metabolism; and the rate of deposition or use of body fat. Rats were fed purified diets or combined purified-synthetic diets containing 0%, 11%, or 45% of the calories as fat. Dietary procedures and caloric intake are given, along with body weight measurements for the male and female animals. Some of the general conclusions reached are: (1) Epididymal and abdominal fat in the same animal have similar fatty acid compositions. (2) The metabolic activities of liver and adipose tissue are affected by diets high and low in fat. (3) The TFA content and fatty acid composition of liver is stable with respect to changes in dietary fat. B.P.

N68-33555*# Woods Hole Oceanographic Institution, Mass.

MOLECULAR STRUCTURE AND COMPOSITION OF FISH OTOLITHS

Egon T. Degens, Werner G. Deuser, and Richard L. Haedrich Aug. 1968 30 p refs *Its* Reference No. 68-56

(Contract NSR-22-014-001; Grants Am. Chem. Soc. PRF-1943A2; NSF GA-970)

(NASA-CR-96453) CFSTI: HC $3.00/MF $0.65 CSCL 06C

Information is presented on the origin of otoliths. Twenty-five species of wide phylogenetic and environmental range were studied and aragonite was the only major mineral form present. A fibrous protein serves as template for the epitaxial growth of aragonite. Electromicrographs reveal the structural interrelationships between the protein and the aragonite. The stable isotope distribution of the aragonite suggests that the otoliths are formed close to isotopic equilibrium with sea water or fresh water respectively. Phylogenetic, environmental, and physiological aspects are discussed. Author

IAA ENTRIES

A68-37064 *
ELEMENTS OF SPACE BIOLOGY - AN EXPERIMENTAL APPROACH TO THE BASIC BIOLOGY OF STRESS.
S. M. Siegel (Union Carbide Corp., Research Institute, Tarrytown, N. Y.).
IN: ADVANCES IN SPACE SCIENCE AND TECHNOLOGY. VOLUME 9.
Edited by F. I. Ordway, III.
New York, Academic Press, Inc., 1967, p. 1-104. 54 refs.
Research supported by the University of Chicago and the John Simon Guggenheim Memorial Foundation; Contract No. NASw-767.

Broad survey of the basic biology of stress, which is defined as the deviation of any environmental factor, such as pressure or temperature, from its norm. Following an introduction to space biology and the establishment of definitions, the greatly varied requirements of life forms on earth and the elements of stress on biological forms are outlined. Conditions beyond the earth from the biological point of view are summarized, following which detailed attention is given to experiments involving the response of terrestrial life to simulated nonterrestrial conditions. Among the adjusted environmental factors are atmospheric composition, temperature, water and aqueous media, gravitation, radiation, and toxicants. In conclusion the probability of the existence of life beyond the earth is assessed. Z. W.

A68-37065
SYNOPSIS OF MARTIAN LIFE THEORIES.
Hubertus Strughold (USAF, Systems Command, Aerospace Medical Div., Brooks AFB, Tex.).
IN: ADVANCES IN SPACE SCIENCE AND TECHNOLOGY. VOLUME 9.
Edited by F. I. Ordway, III.
New York, Academic Press, Inc., 1967, p. 105-122. 94 refs.

Synopsis of theories concerning the existence of life in the past and present on Mars. Two major environmental areas on the planet are considered: the near-ground atmosphere and the surface layer of the lithosphere. It is pointed out that such localized places as craters, faults, valleys, and caves, representing the so-called microenvironment, may offer more favorable biological conditions than the microenvironment of wide-open surface areas. The life theories seen in the perspective of geoecological criteria, and possible chemical composition of the soil are examined, as well as air pressure, atmospheric composition, radiation, and light. It is concluded that the occurrence of life on Mars is more in the realm of probability than of possibility. The interesting theory that fossil, or conceivably even actual life exists on or beneath a hypothetical buried frozen ocean is considered. Z. W.

A68-37183 #
TEMPERATURE-ENTROPY DIAGRAM FOR 80%-OXYGEN AND 20%-NITROGEN MIXTURE.
B. J. Sollami (Bendix Corp., Instruments and Life Support Div., Davenport, Iowa).
Bendix Technical Journal, vol. 1, Spring 1968, p. 95, 96.

Description of a temperature-entropy diagram for an 80%-oxygen 20%-nitrogen atmosphere for space cabins. The thermodynamic properties of the mixture are shown, together with the lines of constant density, enthalpy, and pressure. The reference state of zero entropy and zero enthalpy is at the bubble point at a pressure of 1 atm. The resulting critical temperature and pressure for an 80%-oxygen 20%-nitrogen mixture are, respectively, -304°F and 687 psia. M. M.

A68-37189
TELEMETRIC MEASURING METHODS IN AEROSPACE MEDICINE [TELEMETRISCHE MESSMETHODEN IN DER LUFT- UND RAUMFAHRTMEDIZIN].
R. Amendt (Flugmedizinisches Institut der Luftwaffe, Fürstenfeldbruck, West Germany).
(Seminar für ärztliche Fortbildung, 8th, Westerland/Sylt, West Germany, June 4-8, 1967.)
Ärztliche Praxis, vol. 19, Sept. 19, 1967, p. 2-6. In German.

Investigation of means by which biological data may be telemetrically transmitted. A system is proposed for the measuring, transmitting, and storing of data collected during aeronautical and astronautical flights. Other applications of the proposed telemetric measuring methods are also discussed. R. B. S.

A68-37237 #
FIRST RESULTS OF SPACE BIOLOGICAL EXPERIMENTS [PRIMI RISULTATI DEGLI ESPERIMENTI BIOLOGICI SPAZIALI].
Aristide Scano (Centro di Studi e Ricerche di Medicina Aeronautica e Spaziale, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 16 p. 47 refs. In Italian.

Discussion of the early results of experiments on the survival of living organisms in space vehicles. The results show that the greatest part of living organisms investigated, both animal and vegetable, has tolerated without individual damages or only with slight damages, a period of stay of over one week in a pressurized capsule in orbital flight. The organisms most sensitive to ionizing radiation, vibrations, and accelerations have suffered more serious genetic changes than is the case in the laboratory, when exposed to an equal amount of radiation. A comparison between the effect of weightlessness in plants and higher animals has stressed the fundamental importance of the central nervous system in adapting the animals to the new conditions in a short time. M. M.

A68-37238 #
RECENT KNOWLEDGE ACQUIRED IN THE FIELD OF LABYRINTHINE FUNCTIONALITY IN ASTRONAUTS [RECENTI ACQUISIZIONI IN TEMA DI FUNZIONALITA LABIRINTICA NEI COSMONAUTI].
Rocco Caporale (Centro di Studi e Ricerche di Medicina Aeronautica e Spaziale, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 8 p. In Italian.

Discussion of new knowledge gained in the field of labyrinthine functionality in cosmonauts. It is noted that, during weightlessness, the otolithic organs are in the particular functional state called physiological deafferentiation. They interrupt their contribution to the functional objectives in which they participate under conditions of normal gravity. The hypothesis formulated by the authors, according to which the sensitivity of the otolithic organs should be appreciably enhanced during weightlessness, seems to be refuted by the results of recent investigations, which show that the law of Weber and Fechner does not seem to be applicable to the otolithic function in an environment in which the force of gravity is close to zero. M. M.

A68-37239 #
HEAT PROBLEMS IN SPACE MEDICINE [PROBLEMI TERMICI IN MEDICINA SPAZIALE].

Paolo Rota (Centro di Studi e Ricerche di Medicina Aeronautica e Spaziale, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 11 p. 27 refs. In Italian.

Discussion of the thermal characteristics of space flight and of the general principles of heat regulation. The physiological and technical criteria which govern the conditioning and thermal protection of space vehicles and clothing are treated. The limits of physical and psychic resistance to elevated temperatures and the pertinent screening, training, and acclimatizing problems are discussed.
M.M.

A68-37240 #
PHYSIOLOGICAL AND ARTIFICIAL DEVICES FOR PROTECTING ASTRONAUTS AGAINST EXTREME TEMPERATURES [MEZZI FISIOLOGICI ED ARTIFICIALI PER LA DIFESA NELL'ASTRONAUTA CONTRO LE ESTREME TEMPERATURE].
Tomaso Lomonaco (Roma, Università, Scuola di Specializzazione in Medicina Aeronautica e Spaziale, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 6 p. In Italian.

Discussion of the physical and physiological mechanisms by means of which the human organism keeps its temperature constant. Artificial means capable of mitigating the effects of extreme heat changes on the system of astronauts are divided into: (1) physiological means, consisting of gradual adaptation to cold and heat; and (2) mechanical protective devices. The relative merits of these protective devices are discussed.
M. M.

A68-37241 #
EXTERNAL RADIOACTIVITY DETECTED FOR BIOLOGICAL PURPOSES DURING CIVILIAN AIRCRAFT FLIGHTS [SULLA RADIOATTIVITA ESTERNA RILEVATA AI FINI BIOLOGICI DURANTE VOLI DI LINEA].
G. Dal Fabbro and A. Ando (Compagnia Nazionale Alitalia, Linee Aeree Italiane, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 9 p. 10 refs. In Italian.

Description of the results of a survey of the amount of radiological contamination detected in ten commanders of DC 8's and twenty commanders of Caravelle twin jets. The results of the readings made so far show that one third of the maximum dose permitted by the International Commission for Radiological Protection was found in 12% of the cases, while the dose is one tenth of the maximum permitted dose in 88% of the cases investigated.
M. M.

A68-37242 #
CONTINUOUS VARIATION OF THE GRAVITATIONAL FIELD AS AN ANALOG METHOD OF INVESTIGATING THE EFFECTS OF WEIGHTLESSNESS ON THE DEVELOPMENT OF LIVING ORGANISMS [LA VARIAZIONE CONTINUA DEL CAMPO GRAVITAZIONALE COME METODO DI STUDIO ANALOGICO DEGLI EFFETTI DELLA IMPONDERABILITA SULLO SVILUPPO DI ORGANISMI VIVENTI].
Franco Tomassi (Roma, Università, Scuola di Specializzazione in Medicina Aeronautica e Spaziale, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 8 p. In Italian.

Investigation of a technique for bringing about a continuous change in the gravitational field, and discussion of the preliminary results obtained by this technique in the development and growth, under weightlessness, of a creeper plant, Lathyrus odoratus grandiflorus. The results obtained showed a definite influence of changes in the gravitational field on the growth of Lathyrus odoratus grandiflorus.
M. M.

A68-37243 #
PHYSIOPATHOLOGICAL EFFECTS OF ACCELERATIONS ON ASTRONAUTS DURING LAUNCH INTO ORBIT AND RETURN TO EARTH OF THE SPACE CAPSULE [EFFETTI FISIOPATOLOGICI DELLE ACCELERAZIONI NEGLI ASTRONAUTI DURANTE IL LANCIO IN ORBITA ED IL RITORNO SULLA TERRA DELLA CAPSULA SPAZIALE].
Enzo Fissi (Roma, Università, Scuola di Specializzazione in Medicina Aeronautica e Spaziale, Rome, Italy).
IN: SPACE PROGRESS: SPACE PROGRAMS IN THE NEXT DECADE; INTERNATIONAL TECHNICAL AND SCIENTIFIC CONFERENCE ON SPACE, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS [PROGRESSO SPAZIALE: I PROGRAMMI SPAZIALI NEL PROSSIMO DECENNIO; CONVEGNO INTERNAZIONALE TECNICO SCIENTIFICO SULLO SPAZIO, 8TH, ROME, ITALY, APRIL 1-3, 1968, PROCEEDINGS]. [A68-37218 19-30]
Rome, Rassegna Internazionale Elettronica, Nucleare e Teleradiocinematografica, 1968. 4 p. In Italian.

Discussion of the effects of accelerations on the heart and circulation of astronauts during an orbiting mission and return to earth. The general characteristics of the changes produced by acceleration are discussed, and the effects caused by specific types of acceleration are reviewed. The type of acceleration usually withstood by astronauts during launching and landing is the one that affects the chest and back between 6 and 9 g. This is the type of acceleration that is best withstood by the heart and circulatory system, especially due to the favorable horizontal position in which the astronauts lie.
M. M.

A68-37453 *
RADIATION EXPOSURES DURING THE BIOSATELLITE II FLIGHT.
John E. Hewitt (NASA, Ames Research Center, Moffett Field, Calif.).
BioScience, vol. 18, June 1968, p. 565-569.

Description of experiments regarding radiation exposure of biological material in the Biosatellite 2 program. The biological material was divided into four groups. Two groups were simultaneously exposed aboard Biosatellite 2 and in an earth-control capsule to radiation and to weightlessness, while the other groups were not irradiated. The radiation source was a Sr^{85} gamma emitter giving off a single ray of 0.513-MeV energy; the half-life of the source was 64 days. On the basis of the results obtained, a radiation source with a longer half-life is recommended.
R.M.

A68-37513
EXERCISE AT ALTITUDE.
Edited by Rodolfo Margaria (Milano, Università, Istituto di Fisiologia Umana, Milan, Italy).
(Council of the International Union of Physiological Sciences, International Symposium, Milan, Italy, Sept. 29-Oct. 2, 1966.)
Amsterdam, Excerpta Medica Foundation, 1967. 216 p.
$13.

CONTENTS:
FOREWORD. Rodolfo Margaria (Milano, Università, Milan, Italy), p. 5, 6.
LIST OF AUTHORS, p. 9, 10.

ENERGETICS AND OXYGEN UPTAKE.
AEROBIC AND ANAEROBIC ENERGY SOURCES IN MUSCULAR EXERCISE. Rodolfo Margaria (Milano, Università, Milan, Italy), p. 15-32.
PULMONARY VENTILATION DURING EXERCISE AT ALTITUDE. Robert F. Grover (Colorado, University, Denver, Colo.) and John T. Reeves (Colorado, University, Boulder, Colo.; Kentucky, University, Lexington, Ky.), p. 33-39.
THE COST OF THE OXYGEN DEBT AT HIGH ALTITUDE. J. Durand, Cl. Pannier, J. de Lattre, J. P. Martineaud, and J. M. Verpillat (Paris, Université, Paris, France; Instituto Boliviano de Biología de la Altura, La Paz, Bolivia), p. 40-47.
BLOOD LACTATE CONCENTRATION DURING EXERCISE AT ACUTE EXPOSURE TO ALTITUDE. Lars Hermansen and Bengt Saltin (Fysiologiska Institutionen, Stockholm, Sweden), p. 48-53.
LACTIC ACID PRODUCTION IN SUBMAXIMAL MUSCULAR EXERCISE. H. Saiki, Rodolfo Margaria, and F. Cuttica (Milano, Università, Milan, Italy), p. 54-57.
LACTACID O_2 DEBT IN ACUTE AND CHRONIC HYPOXIA. Paolo Cerretelli (Milano, Università, Milan, Italy), p. 58-64.
THEORETICAL EFFECTS OF ALTITUDE ON THE EQUATION OF MOTION OF A RUNNER. B. B. Lloyd (Oxford University, Oxford, England), p. 65-72.

RESPIRATORY SYSTEM.
GAS DIFFUSION IN THE LUNG AT ALTITUDE. John B. West (London, University, London, England), p. 75-83.
THE FACTORS AFFECTING VENTILATION DURING EXERCISE AT SEA LEVEL AND AT ALTITUDE. Giorgio Torelli and Edgardo d'Angelo (Milano, Università, Milan, Italy), p. 84-107.
READJUSTMENTS OF VENTILATION/PERFUSION RELATIONSHIPS IN THE LUNG AT ALTITUDE. P. E. Haab, D. R. Held, and L. E. Farhi (Fribourg, Université, Fribourg, Switzerland; New York, State University, Buffalo, N.Y.), p. 108-111.
THE ADJUSTIVE RESPONSES OF MAN AT REST AND WORK UNDER LOW ATMOSPHERIC PRESSURE. Wlodzimierz Missiuro (Polska Akademia Nauk, Warsaw, Poland), p. 112-123.

CARDIOVASCULAR SYSTEM.
FACTORS LIMITING THE O_2 TRANSPORTING CAPACITY IN EXERCISE IN HYPOXIA. Johannes Piiper (Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Göttingen, West Germany), p. 127-136.
MIXED VENOUS BLOOD GAS TENSIONS AND CARDIAC OUTPUT BY "BLOODLESS" METHODS - RECENT DEVELOPMENTS AND APPRAISAL. L. E. Farhi (New York, State University, Buffalo, N.Y.) and P. Haab (Fribourg, Universität, Fribourg, Switzerland), p. 137-144.
CHANGES IN MIXED VENOUS OXYGEN TENSION AT REST AND EXERCISE DURING EXPOSURE TO ALTITUDE. P. Haab (Fribourg, Université, Fribourg, Switzerland), A. Chinet (New York, State University, Buffalo, N.Y.), and L. E. Farhi, p. 145, 146.

BLOOD.
TRANSPORT OF O_2 AND CO_2 AT ALTITUDE. F. Kreuzer (Nijmegen, Katholieke Universiteit, Nijmegen, Netherlands), p. 149-158.
OXYGEN CAPACITY AND AFFINITY IN MAMMALS DURING HIGH ALTITUDE ACCLIMATIZATION. H, Bartels (Medizinische Hochschule, Hannover, West Germany), p. 159-162.

ADAPTATION.
HUMORAL CONTROL OF ERYTHROPOIESIS AT ALTITUDE. César Reynafarje (Universidad Mayor de San Marcos, Lima, Peru), p. 165-170.
RESISTANCE OF CARDIAC MUSCLE TO ACUTE ANOXIA IN HIGH ALTITUDE ADAPTATION. O. Poupa (Československá Akademie Věd, Prague, Czechoslovakia), p. 171-178.
TRAINING FOR MAXIMUM PERFORMANCE AT ALTITUDE. B. Balke, J. T. Daniels (Wisconsin, University, Madison, Wis.), and J. A. Faulkner (Michigan, University, Ann Arbor, Mich.), p. 179-186.

PATHOLOGY.
CERTAIN VASCULAR ADJUSTMENTS AND MALADJUSTMENTS AT ALTITUDES. Hans H. Hecht (Chicago, University, Chicago, Ill.), p. 189-200.

HISTORY.
EXERCISE AT ALTITUDE - HISTORICAL REMARKS. Ernst Jokl (Kentucky, University, Lexington, Ky.), p. 203-205.
SUBJECT INDEX, p. 207-215.
INDEX OF AUTHORS, p. 216.

A68-37616
MEASUREMENT OF HUMAN ERRORS WITH EXISTING DATA.
K. Inaba and R. Matson (Serendipity Associates, Chatsworth, Calif.).
IN: ANNALS OF ASSURANCE SCIENCES; PROCEEDINGS OF THE SEVENTH RELIABILITY AND MAINTAINABILITY CONFERENCE, SAN FRANCISCO, CALIF., JULY 14-17, 1968. [A68-37596 19-15]
Conference sponsored by the American Society of Mechanical Engineers, the Society of Automotive Engineers, and the American Institute of Aeronautics and Astronautics.
New York, American Society of Mechanical Engineers, 1968, p. 301-307.

Discussion of a technique to take advantage of a large pool of maintenance data available from the USAF in order to measure human errors. The data were found to be especially useful in isolating the basic source of problems. Emphasis has been placed on objectivity, consistency, and efficiency of analysis. The basic technique is one of tracing a given system throughout its maintenance history and searching for related maintenance actions. If a given maintenance action is judged to be caused by the immediately preceding action, it is designated as an error. F.R.L.

A68-37743 *#
MEASUREMENT OF SPACE ENVIRONMENTAL EFFECTS ON BIOLOGICAL SPECIMENS.
T. H. Harmount (NASA, Ames Research Center, Moffett Field, Calif.).
IN: CANAVERAL COUNCIL OF TECHNICAL SOCIETIES, SPACE CONGRESS, 5TH, COCOA BEACH, FLA., MARCH 11-14, 1968, PROCEEDINGS. VOLUME 1. [A68-37736 19-30]
Cape Canaveral, Fla., Canaveral Council of Technical Societies, 1968, p. 3.5-1 to 3.5-5.

Assessment of the techniques used for experimentation with live biology in space flight. It is concluded that major developments are required in instrumentation, environmental control, life support, and operational techniques for long-term space-biology laboratories to be feasible. The present study is based on the results of the Biosatellite 1, 2, and 3 program. R.M.

A68-37768 #
DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION.
Vernon L. Grose (Tustin Institute of Technology, Santa Barbara, Calif.).
IN: CANAVERAL COUNCIL OF TECHNICAL SOCIETIES, SPACE CONGRESS, 5TH, COCOA BEACH, FLA., MARCH 11-14, 1968, PROCEEDINGS. VOLUME 2. [A68-37762 19-31]
Cape Canaveral, Fla., Canaveral Council of Technical Societies, 1968, p. 11.2-1 to 11.2-11. 18 refs.

Discussion of the physiological limitations of the human and his susceptibility to error when subjected to extended and accelerated spacecraft rolling. The context for discussion is provided by the Gemini 8 spaceflight emergency of uncontrolled and accelerated rolling which caused the premature abort of the mission. Data from this flight imply that astronaut performance was impaired due to vestibulo-ocular disturbance. Five deleterious effects are attributed to spacecraft roll acceleration: disorientation, dizziness, impaired vision, nausea, and panic. Recommendations for astronaut selection and conditioning as well as spacecraft design are proposed to minimize these effects of accelerated rolling.
(Author)

A68-37790 *#
THE EFFECTS OF ASTRONAUT MOTION ON PRECISE CONTROL OF SPACECRAFT ATTITUDE.
J. R. Tewell and C. H. Johnson (Martin Marietta Corp., Aerospace Group, Denver, Colo.).
IN: CANAVERAL COUNCIL OF TECHNICAL SOCIETIES, SPACE CONGRESS, 5TH, COCOA BEACH, FLA., MARCH 11-14, 1968, PROCEEDINGS. VOLUME 3. [A68-37788 19-07]
Cape Canaveral, Fla., Canaveral Council of Technical Societies, 1968, p. 19.2-1 to 19.2-21. 6 refs.
Contracts No. NAS 1-6713; No. NAS 1-7276.

Description of the simulation techniques used in a recent experimental study to determine the disturbance torques on a manned spacecraft generated by typical astronaut motions. The attitude and rate variations developed from these torques are presented for an Apollo mission spacecraft configuration. Results indicate that the spacecraft disturbances are of sufficient magnitude to affect space experiments requiring precise attitude stabilization. F.R.L.

A68-37808 #
DOES LIFE EXIST ELSEWHERE IN THE UNIVERSE? - A REVIEW OF SCIENTIFIC THEORY AND THE POTENTIAL OF SPACE EXPLORATION.
Minas Ensanian (Bell Aerospace Corp., Bell Aerosystems Co., Buffalo, N.Y.).
IN: CANAVERAL COUNCIL OF TECHNICAL SOCIETIES, SPACE CONGRESS, 5TH, COCOA BEACH, FLA., MARCH 11-14, 1968, PROCEEDINGS. VOLUME 3. [A68-37788 19-07]
Cape Canaveral, Fla., Canaveral Council of Technical Societies, 1968, p. 25.5-1 to 25.5-20. 115 refs.

Attempt to establish a biologically oriented cosmological theory. Various recent results in physics and astrophysics are related to biology, assuming the existence of a biological field theory similar to the unified field theory in physics which allows predictions of life evolution on a cosmic scale, and consequently leads to the detection of life forms other than terrestrial. Communication with extraterrestrial intelligent species by partially unconventional methods is envisioned. R.M.

A68-38045 #
CYTOGENIC EFFECT OF LASER RADIATION AT THE 6328-Å WAVELENGTH IN ALLIUM FISTULOSUM L. SPROUTS [TSITOGENETICHESKOE DEISTVIE LAZERNOGO IZLUCHENIIA S DLINOI VOLNY 6328 Å V PROROSTKAKH ALLIUM FISTULOSUM L.].
B. M. Rabkin and V. A. Tarasov (Akademiia Nauk SSSR, Institut Obshchei Genetiki, Moscow, USSR).
Akademiia Nauk SSSR, Doklady, vol. 180, June 21, 1968, p. 1471, 1472. 7 refs. In Russian.

Experimental investigation showing that continuous laser irradiation at the 6328-Å wavelength can lead to structural chromosome aberrations. The results were obtained with onion sprouts obtained in Petri dishes at 25°C. V.P.

A68-38076 *#
PLANETARY QUARANTINE ANALYSIS.
Charles W. Craven (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.).
Astronautics and Aeronautics, vol. 6, Aug. 1968, p. 20-24.

Survey of the objectives and criteria for sterilization and decontamination of space vehicles, with special emphasis on the Mars missions. The NASA policy for sterilization and quarantine requirements in the second series of Ranger vehicles and Mariners is summarized. The methodology of contamination analysis, using a hypothetical planetary mission, is detailed. Quarantine guidelines and an equation expressing the probability of contamination of a planet by a planetary vehicle are developed. Investigations and trials of possible contamination sources, such as liquid propellants, and decontamination due to the thermal vacuum environment are reviewed. Z.W.

A68-38077 *#
CURRENT CONCEPTS IN STERILIZATION.
Joseph A. Stern (California Institute of Technology, Jet Propulsion Laboratory, Project Engineering Div., Environmental Requirements Section, Pasadena, Calif.).
Astronautics and Aeronautics, vol. 6, Aug. 1968, p. 25-34.

Review of current concepts concerning sterilization requirements for space vehicles, the techniques for establishing the sterilization process parameters, and the significance of the factors relating to sterilization. It is concluded that the requirement for space hardware sterilization created by the planetary quarantine constraint creates a new environment in which such hardware must survive. Defining this environment and the thermal stabilization process to which the vehicle will be subjected requires a knowledge of the design of the vehicle, its thermal characteristics, and the procedures, materials, and techniques used in its assembly and testing, as well as a knowledge of the distribution and thermal resistance of microorganisms and a knowledge of the required level of sterilization. Z.W.

A68-38078 *#
STERILIZATION REQUIREMENTS, OPERATIONAL PROCEDURES, FACILITIES AND HARDWARE.
George F. Ervin (California Institute of Technology, Jet Propulsion Laboratory, Advanced Planetary Missions Technology Office, Pasadena, Calif.).
Astronautics and Aeronautics, vol. 6, Aug. 1968, p. 34-48. 75 refs.

Survey of the practical aspects of the space vehicle sterilization and decontamination problem. A historical evolution of this question is presented with special emphasis on the dry-heat sterilization requirements. The guidelines for future sterilization and decontamination requirements are discussed. The development of hardware and assembled items such as batteries, gyros, accelerometers, tape recorders, and the like, which would meet the anticipated sterilization requirements, is summarized. It is shown that although the problem is very difficult, it is possible to manufacture electronic hardware under the imposed restrictions. The solid propulsion motor is another difficult problem for sterilization, which must be resolved. A special sterilization assembly development laboratory and its contribution to a new planetary vehicle known as Capsule System Advanced Development is described. Z.W.

A68-38083 *
EFFECT OF LUNAR GRAVITY ON METABOLIC RATES.
W. G. Robertson and E. C. Wortz (Garrett Corp., AiResearch Manufacturing Co., Los Angeles, Calif.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 799-805. 16 refs.
Contract No. NAS 9-6494.

Experiments were conducted to determine the effects of simulated lunar gravity on the metabolic cost of work in both the A-5-L and the RX-2 full pressure suits. Lunar gravity simulation was accomplished with a modified Hewes and Spady inclined-plane simulator and a six-degree-of-freedom (6-DOF) suspension simulator. Six subjects wearing the A-5-L and RX-2 pressure suits were instrumented for determining metabolic rates; data were collected for walking during ventilated and pressurized modes of operation for each suit. Results show that the metabolic rates for walking are lower in the 1/6-g environment than in the 1-g environment. There were no significant differences in the energy costs of walking between the RX-2 and the A-5-L pressure suits at 1/6-g with the suits pressurized. Pressurization results in a slight but significant increase in metabolic rate in the RX-2. Pressurization of the A-5-L results in a significant increase in metabolic rate in all exercise modes in each simulator. Metabolic rates were significantly lower in the 6-DOF gimbal simulator than in the inclined-plane simulation. An increase in the number of degrees of freedom results in a decrease in the cost of exercise. These suits show no differences in the metabolic cost of exercise in the 1/6-g environment. (Author)

A68-38084
EFFECT OF WATER IMMERSION AND BODY POSITION UPON PERCEPTION OF THE GRAVITATIONAL VERTICAL.
John G. Nelson (U.S. Naval Material Command, Naval Air Development Center, Aerospace Medical Research Dept., Johnsville, Pa.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 806-811. 26 refs.

The purpose of this study was to measure the accuracy, particularly the sensitivity of short-term repeatability, with which humans can use their vestibular sense to perceive the gravitational vertical, and how this ability varies with body (head) position. Equipment and procedures to reduce or eliminate nonvestibular cues were selected through an iterative process of design, development, test, and evaluation. Subjects were restrained upon an underwater two-axis tilt table, and required to position themselves, via signals to experimenters, in one of six cardinal positions of the body (head) with respect to gravity. Seven subjects, in three immersions each, made three judgments per immersion at each of the six positions. The group responses showed some large and significant constant errors, most notably a pitch-forward bias shared (unequally) by all of the medial-plane positions, exceeding 30° in the nominal head-down position. A probable error uninflated by constant errors was computed for each of the two orthogonal directions of deviation for each of the six positions. The results supported the classical concept of reduced sensitivity in the head-down as compared with the head-up positions. However, probable error ranged from 15° to 40°, indicating only a marginally useful sensitivity in any position. In addition, sensitivity at any one position was not necessarily symmetrical as to direction of deviation, and some sensitivities at intermediate values of tilt overlapped head-up or head-down sensitivities. (Author)

A68-38085
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT SYSTEMS IN CRASH IMPACTS.
Richard G. Snyder, Joseph W. Young (Ford Motor Co., Biomechanics Dept., Dearborn, Mich.), Clyde C. Snow, G. Townley Price (Federal Aviation Administration, Aeromedical Service, Civil Aeromedical Research Institute, Dept. of Transportation, Oklahoma City, Okla.), and W. M. Crosby (Oklahoma, University, School of Medicine, Dept. of Gynecology and Obstetrics, Oklahoma City, Okla.).
(Joint Committee on Aviation Pathology, Scientific Session, 6th, Ottawa, Canada, Sept. 12-14, 1967.)
Aerospace Medicine, vol. 39, Aug. 1968, p. 812-829. 84 refs.
FAA-supported research.

Considerable attention has been focused on the sophisticated restraint and ejection protection of rigidly selected occupants of military aircraft and manned space vehicles. However, the vast majority of occupants of both military and civil transport and general aviation aircraft, as well as the occupants of more than eight million new automotive vehicles per year, include a much wider range of sex, age, and physical capability. The means of protecting and yet accommodating this wide range of occupant population are restricted to less sophisticated types of restraint systems. The types and severity of injuries attributed to such systems as the lap belt, three-point harness, single diagonal belt, and double-torso harness, as well as an experimental double-torso inverted-Y yoke with inertia reel and an air bag restraint system, have been assessed in this study. Sixty experiments were conducted by the Civil Aeromedical Institute, FAA, with Savannah baboons (Papio cynocephalus) utilizing the 6571st Aerospace Medical Laboratory's Daisy Decelerator at Holloman AFB. Controlled experiments in a related series of studies considered a number of factors, including physical impact patterns typical of a commercial jet transport crash, the side-facing seat installation, and forward, rear, and side-facing light-aircraft and automotive impacts. One additional impact series investigated effects of seat belt restraint on pregnant maternal and fetal trauma. Both gross and microscopic examinations were conducted post-impact for acute trauma, and three cases of chronic survival injuri 30 days and 90 days post-impact are described. Trauma patterns distinctive of the various restraint systems are identified and described. (Author)

A68-38086 #
SULFHYDRYL PROTECTION IN RATS EXPOSED TO FRACTIONATED ACUTE DOSES OF GAMMA AND X-IRRADIATION.
George S. Melville, Jr. and Arthur E. Gass, Jr. (USAF, Systems Command, Aerospace Medical Div., School of Aerospace Medicine, Radiobiology Div., Brooks AFB, Tex.).
(AEROSPACE MEDICAL ASSOCIATION, 1967 ANNUAL SCIENTIFIC MEETING, WASHINGTON, D.C., APRIL 10-13, 1967, PREPRINTS OF SCIENTIFIC PROGRAM, p. 289, 290.)
Aerospace Medicine, vol. 39, Aug. 1968, p. 830-834. 15 refs.
DASA-supported research.
[For abstract see issue 23, page 3958, Accession no. A67-41648]

A68-38087
EFFECT OF VESTIBULAR CORIOLIS REACTION ON RESPIRATION AND BLOOD-FLOW CHANGES IN MAN.
R. Sinha (New York University, Institute of Rehabilitation Medicine, New York, N.Y.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 837-844. 86 refs.

Simultaneous measurements of forearm blood-flow and respiration have been made in 24 subjects. Each subject was secured in a chair mounted centrally on a horizontal turntable and accelerated to 30 rpm. Rotation at this constant speed was maintained for 5 to 8 min with the head held stationary in relation to the turntable. Then vestibular stimulation was caused by imposing a nodding motion on the head by means of an automatic mechanical device. Blood-flow, respiration rate and volume, and end-expiratory carbon dioxide concentration were measured continuously. Arterial blood samples taken from five subjects before and after the run were analyzed. Vestibular stimulation caused, almost invariably, an increase in minute ventilation forearm blood-flow and arterial pH, as well as a decrease in end-expiratory and arterial carbon dioxide levels. Although expiration was usually prolonged and jerky, the effects of vestibular stimulation on the respiratory rate and duration of inspiration and expiration were variable. During the 10 to 12-min period after the cessation of vestibular stimulation blood-flow and minute ventilation fell to or below control levels. These findings suggest that the effects of vestibular stimulation may predispose to vasovagal syncope and reduce tolerance to G forces. (Author)

A68-38088 *
EFFECTS OF CENTRIFUGE RADIUS ON THE PERFORMANCE OF ENTRY TASKS.
W. C. Middleton and W. J. White (McDonnell Douglas Corp., Douglas Aircraft Co., Advance Biotechnology and Power Dept., Santa Monica, Calif.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 845-848.
Contract No. NAS 9-4166.

This study is part of a program concerned with the quantitative demonstration of the feasibility and general effectiveness of a short-radius centrifuge in an orbiting laboratory. The study was designed to measure the effect of the short-radius force environment on the basic motor skills required during entry. Representative entry tasks were performed by 10 subjects under static conditions and also during exposure to an Apollo entry profile produced at centrifuge radii of 64 in. and 178 in. Performance of a discrete response task and a tracking task decreased between 4 and 22% on the moving centrifuge compared with performance on the static centrifuge, and it decreased between 12 and 22% on the short- compared with the long-radius. These changes in performance, resulting from changes in the force environment, were sufficiently small, compared with normal variations in flight control performance, that they should not invalidate the onboard centrifuge as an entry-test device. Positive transfer of training was obtained in going from the short to the long radius, but negative transfer was obtained for two measures in going from the long to the short radius. (Author)

A68-38089 *
INFLUENCE OF WEIGHTLESSNESS UPON THE SKELETON - A REVIEW.
R. S. Hattner (U.S. Public Health Service, Hospital, San Francisco, Calif.) and D. E. McMillan (U.S. Public Health Service, Hospital, Metabolic Service, San Francisco, Calif.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 849-855. 88 refs.
NASA-supported research.

Studies of astronauts have revealed abnormal losses of calcium and reduced bone density as a result of weightlessness incurred during space flight. Thus, it is apropros to review literature pertinent to osseous metabolism during weightlessness. It is concluded

that significant skeletal atrophy may occur during prolonged exposure to a hypogravic environment. The etiology appears to consist of failure of the skeleton to maintain its mass under conditions of reduced mechanical strain. The resultant disorder seems to vary dynamically with time with regard to rates of bone formation and resorption in experimental models simulating reduced gravity. During hypogravic periods the rate of skeletal loss is estimated to be 1 to 2% per month, probably unremitting at least for a year to years. The practical significance to space flight of the implications made are considered with special reference to biomechanics. Stress fractures may occur during prolonged voyages. In-flight exercises may be beneficial in preventing skeletal loss, and androgens or phosphate may prove useful as therapeutic adjuncts. (Author)

A68-38090
STUDY OF THE BIOLOGICAL CLEANABILITY OF SURFACES USING RADIOISOTOPE TRACER TECHNIQUES.
V. L. Gelezunas and A. J. Bryce (General Electric Co., Biological Physics Laboratory, Philadelphia, Pa.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 856-859. 8 refs.

Radioisotope tracer techniques were used as a basis for evaluating biological cleanability. Various surfaces were used and special emphasis was placed on low contamination levels. Either labelled bacteria or compounds of biological interest were deposited on surfaces and exposed for varying ultrasonic cleaning times. The residual contaminant remaining on the surface after cleaning was inferred by measuring the activity in a low-level counting system. It was shown that relative cleanability can be a function of wash time, and that removal of thin chemical films and bacteria follow similar kinetics. Ultrasonic cleanability data were found to fit the following equation: $F = Be^{-at} + (1 - B)e^{-bt}$. F is the residual fraction of initial contaminant remaining after washing time t, while B, a and b are cleanability parameters. Calculations indicate that P^{32} labelled bacteria can be detected (counting precision ±5%) to at least 1 bacteria/cm^2 in reasonable times. (Author)

A68-38091
INTRAOCULAR EFFECTS ON FLASHBLINDNESS.
Gloria T. Chisum (U.S. Naval Material Command, Naval Air Development Center, Aerospace Medical Research Dept., Johnsville, Pa.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 860-868. 12 refs.

The times required to detect a simple display were measured following exposure to eight high-intensity, short-duration adapting flash areas presented in 18 retinal locations. Variations in both the adapting flash area and retinal location produced variations in the time required to respond to the display. The response times for the various experimental conditions indicate that intraocular effects operate in flashblindness, with the effect of producing small but consistent increases in foveal response times following extrafoveal stimulation by an adapting flash. (Author)

A68-38092
ALCOHOL AND MILITARY AVIATION FATALITIES.
Gustave L. Davis (U.S. Armed Forces Institute of Pathology, Aerospace Pathology Branch, Washington, D.C.).
(Joint Committee on Aviation Pathology, Scientific Session, 6th, Ottawa, Canada, Sept. 12-14, 1967.)
Aerospace Medicine, vol. 39, Aug 1968, p. 869-872. 20 refs.

Ethanol was found in 102 (4.8%) of the 2123 toxicologic analyses done at the Armed Forces Institute of Pathology (AFIP) on tissue submitted from U.S. military aircraft-accident fatalities. In 94 of these cases putrefaction or contamination was associated with the formation of ethanol. Eight of the 102 cases (0.38% of the ethanol determinations) are considered significant because of the presence of ethanol without putrefaction or contamination and, therefore, related to ingestion. In only two instances could the significant ethanol be implicated as "probable" cause of the aircraft accident, and one of these involved a nonrated individual who had taken the aircraft without authorization. Four cases involved mechanical failures or environmental difficulties in which ingested alcohol may have been a contributory factor. In two cases the ethanol was found in individuals who do not appear to have been in control of the aircraft, and thus drinking did not contribute to the accident. (Author)

A68-38093
ASYMPTOMATIC HYPERURICEMIA IN FLIGHT PERSONNEL.
G. F. Catlett and G. J. Kidera (United Air Lines, Inc., Medical Dept., Chicago, Ill.).
Aerospace Medicine, vol. 39, Aug. 1968, p. 873-878. 24 refs.

Among males who inherit the trait of hyperuricemia, the rise in urate begins at puberty, reaches abnormal levels by the age of maturity, and then maintains a plateau for the life of the individual. Since high levels of serum uric acid are known to be associated with the development of clinical gout and may antedate the first attack of arthritis by many years, persons with hyperuricemia must be considered as potentially gouty, even when asymptomatic. In this five year study of 619 airline pilots without history of arthritis, blood was assayed colorimetrically for urate as part of their annual preventive medical evaluations. Subjects with elevated uric acid were classified as suspected cases of gout and received further studies for occult evidence of the disease. One hundred and forty subjects or 23% of the sample showed a uric acid concentration in excess of 6 mg per 100 ml of serum, and 39 subjects or 6.3% of the study showed a concentration in excess of 7 mg per 100 ml of serum. A total of 15 subjects sustained an attack of gouty arthritis during the period of study or demonstrated other clinical evidence of gout and all of them were hyperuricemic prior to symptoms. Since the first attack of gout commonly occurs at an older age than the average of this study, a further yield can reasonably be anticipated. The clinical findings of the patients who demonstrated a gouty diathesis are discussed and the value of routine uric acid determinations in aviation medicine is emphasized. (Author)

A68-38213
PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967. 549 p. In Russian.

CONTENTS:

FOREWORD [PREDISLOVIE], p. 3, 4.

GENERAL PROBLEMS OF SPACE MEDICINE AND BIOLOGY [OBSHCHIE PROBLEMY KOSMICHESKOI BIOLOGII MEDITSINY].

CERTAIN PROBLEMS OF ECOPHYSIOLOGY [NEKOTORYE PROBLEMY EKOFIZIOLOGII]. N. M. Sisakian, p. 5-21.

PHYSIOLOGICAL EFFECTS OF GRAVITY [FIZIOLOGICHESKIE EFFEKTY GRAVITATSII]. O. G. Gazenko and A. A. Giurdzhian, p. 22-42.

PROBLEM OF COLLECTING DIAGNOSTIC INFORMATION UNDER SPACE-FLIGHT CONDITIONS AS ONE OF THE ASPECTS OF MEDICAL CYBERNETICS [PROBLEMA SBORA DIAGNOSTICHESKOI INFORMATSII V USLOVIIAKH KOSMICHESKOGO POLETA KAK ODNO IZ NAPRAVLENII MEDITSINSKOI KIBERNETIKI]. V. V. Parin and R. M. Baevskii, p. 42-52.

CERTAIN RESULTS OF MEDICAL STUDIES CONDUCTED DURING THE FLIGHT OF THE "VOSKHOD" SPACECRAFT [NEKOTORYE REZUL'TATY MEDITSINSKIKH ISSLEDOVANII, PROVEDENNYKH VO VREMIA POLETA KORABLIA "VOSKHOD"]. Iu. M. Volynkin and P. V. Vasil'ev, p. 53-67.

BIOLOGICAL STUDIES ON THE VOSTOK AND VOSKHOD SPACECRAFT [BIOLOGICHESKIE ISSLEDOVANIIA NA KOSMICHESKIKH KORABLIAKH "VOSTOK" I "VOSKHOD"]. V. V. Antipov, p. 67-82. 57 refs. [See A68-38214 19-04]

ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE [ELEKTROENTSEFALOGRAFICHESKIE ISSLEDOVANIIA V KOSMICHESKOI MEDITSINE]. O. G. Gazenko, V. S. Gurfinkel', and V. B. Malkin, p. 83-92. [See A68-38215 19-04]

GRAVITATIONAL FACTOR [GRAVITATSIONNYI FAKTOR].

HUMAN PHYSIOLOGICAL REACTIONS UNDER THE ACTION OF ACCELERATIONS DURING SPACE FLIGHTS [FIZIOLOGICHESKIE REAKTSII CHELOVEKA PRI VOZDEISTVII PEREGRUZOK VO VREMIA KOSMICHESKIKH POLETOV]. P. V. Vasil'ev and A. R. Komovskaia, p. 93-105.

HUMAN PHYSIOLOGICAL REACTIONS UNDER THE ACTION OF TRANSVERSE ACCELERATIONS AFTER PRECEDING HYPODYNAMIA [FIZIOLOGICHESKIE REAKTSII CHELOVEKA PRI DEISTVII POPERECHNYKH PEREGRUZOK POSLE PREDSHESTVUIUSHCHEI GIPODINAMII]. A. R. Kotovskaia, R. A. Vartbaronov, and

S. F. Simpura, p. 106-117. 22 refs. [See A68-38216 19-04]

MECHANISM OF CARDIAC-ACTIVITY VARIATION DURING TRANSVERSE ACCELERATIONS [K MEKHANIZMU IZMENENIIA SERDECHNOI DEIATEL'NOSTI PRI POPERECHNO NAPRAVLENNYKH PEREGRUZKAKH]. V. E. Belai, P. V. Vasil'ev, G. D. Glod, and V. G. Petrukhin, p. 118-124. 16 refs. [See A68-38217 19-04]

INFLUENCE OF LONG-TERM TRANSVERSE ACCELERATIONS ON THE FUNCTIONAL STATE OF THE VEGETATIVE NERVOUS SYSTEM [VLIIANIE DLITEL'NYKH POPERECHNYKH PEREGRUZOK NA FUNKTSIONAL'NOE SOSTOIANIE VEGETATIVNOI NERVNOI SISTEMY]. V. E. Belai, P. V. Vasil'ev, and G. D. Glod, p. 124-132. 11 refs. [See A68-38218 19-04]

SIMULATING THE CONTROL FUNCTION OF THE CARDIOVASCULAR SYSTEM UNDER WEIGHTLESSNESS [O MODELIROVANII FUNKTSII REGULIATSII SERDECHNO-SOSUDISTOI SISTEMY V NEVESOMOSTI]. I. I. Kas'ian and N. A. Chekhonadskii, p. 132-140. 9 refs. [See A68-38219 19-05]

REACTION OF THE HUMAN ORGANISM TO THE ACTION OF LANDING DECELERATIONS INCREASING AT HIGH RATES [REAKTSII ORGANIZMA CHELOVEKA NA VOZDEISTVIE PEREGRUZOK PRIZEMLENIIA S BOL'SHIMI SKOROSTIAMI NARASTANIIA]. A. S. Barer, S. A. Gozulov, V. A. Degtiarev, V. K. Kostin, V. M. Tardov, V. A. Elivanov, and E. V. Iakovleva, p. 140-145. 6 refs. [See A68-38220 19-04]

THE ACTION OF DECELERATIONS ON MAN DURING LANDING IN A CABIN AS A FUNCTION OF THE DEGREE OF SHOCK ABSORPTION AND THE STRENGTH OF THE SIDE WIND [VOZDEISTVIE NA CHELOVEKA PEREGRUZOK PRI PRIZEMLENII V KABINE V ZAVISIMOSTI OT STEPENI AMORTIZATSII UDARA I SILY BOKOVOGO VETRA]. G. P. Miroliubov, N. I. Frolov, and B. V. Lemasov, p. 145-152. [See A68-38221 19-04]

DISTURBANCES OF THE REGIONAL BLOOD CIRCULATION IN HUMANS SUBJECTED TO LONG-TERM TRANSVERSELY DIRECTED ACCELERATIONS [K VOPROSU O NARUSHENIIAKH REGIONARNOGO KROVOOBRASHCHENIIA U CHELOVEKA PRI DLITEL'NO DEISTVUIUSHCHIKH POPERECHNO NAPRAVLENNYKH USKORENIIAKH]. M. D. Emel'ianov and E. S. Kotova, p. 152-155. 13 refs. [See A68-38222 19-04]

PROBLEM OF THE GENESIS OF OPTICAL DISORDERS DURING ACCELERATIONS [K VOPROSU O GENEZE ZRITEL'NYKH RASSTROISTV PRI USKORENIIAKH]. B. M. Savin, p. 153-164. 36 refs. [See A68-38223 19-04]

CHARACTERISTICS OF HUMAN VEGETATIVE REACTIONS UNDER THE ACTION OF ANGULAR ACCELERATIONS OF DIFFERENT MAGNITUDES AND DURATIONS [K KHARAKTERISTIKE VEGETATIVNYKH REAKTSII U LIUDEI PRI DEISTVII UGLOVYKH USKORENII RAZLICHNOI VELICHINY I DLITEL'NOSTI]. B. I. Poliakov, p. 165-171. 17 refs. [See A68-38224 19-04]

EFFERENT IMPULSATION OF THE VAGUS OF ANIMALS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS [EFFERENTNAIA IMPUL'SATSIIA BLUZHDAIUSHCHEGO NERVA INTAKTNYKH I DELABIRINTIROVANNYKH ZHIVOTNYKH V NEVESOMOSTI]. E. M. Iuganov and V. V. Aleshin, p. 172-176. 8 refs. [See A68-38225 19-04]

INTERACTION OF THE FUNCTIONS OF THE SEMICIRCULAR CANALS AND THE OTOLITHIC APPARATUS [K VOPROSU O VZAIMODEISTVII FUNKTSII POLUKRUZHNYKH KANALOV I OTOLITOVOGO APPARATA]. S. S. Markarian, p. 176-181. 6 refs. [See A68-38226 19-04]

CUMULATION OF IRRITATIONS DURING MOTION SICKNESS [O KUMULIATSII RAZDRAZHENII PRI BOLEZNI DVIZHENIIA]. I. D. Pestov, p. 181-187. 15 refs. [See A68-38227 19-04]

MATHEMATICAL MODELING OF THE FUNCTION OF THE VESTIBULAR APPARATUS IN WEIGHTLESSNESS [MATEMATICHESKOE MODELIROVANIE FUNKTSII VESTIBULIARNOGO APPARATA V NEVESOMOSTI]. N. A. Chekhonadskii, p. 188-198. 14 refs. [See A68-38228 19-05]

APPLICATION OF CORRELATION ANALYSIS TO INVESTIGATING THE REACTION OF INDIVIDUAL NERVE ELEMENTS OF THE FELINE CEREBRAL CORTEX TO IRRITATION OF THE VESTIBULAR APPARATUS BY BOUNCING [PRIMENENIE KORRELIATSIONNOGO ANALIZA DLIA ISSLEDOVANIIA REAKTSII ODINOCHNYKH NERVNYKH ELEMENTOV GOLOVNOGO MOZGA KOSHEK NA RAZDRAZHENIE VESTIBULIARNOGO APPARATA UKACHIVANIEM]. M. G. Kutateladze, N. V. Merabishvili, and M. D. Venttsel', p. 199-204. [See A68-38229 19-04]

REACTION OF INDIVIDUAL NEURONS OF THE AUDITORY REGION OF THE FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF THE VESTIBULAR APPARATUS [REAKTSII ODINOCHNYKH NEIRONOV SLUKHOVOI OBLASTI KORY GOLOVNOGO MOZGA KOSHEK NA ADEKVATNOE RAZDRAZHENIE VESTIBULIARNOGO APPARATA]. M. G. Kutateladze, p. 204-208. 13 refs. [See A68-38230 19-04]

INVESTIGATION OF THE ACTIVITY OF INDIVIDUAL NEURONS OF THE RETICULAR FORMATION OF THE MEDULLA OBLONGATA (N. GIGANTOCELLULARIS) IN CATS DURING BOUNCING [ISSLEDOVANIE AKTIVNOSTI OTDEL'NYKH NEIRONOV RETIKULIARNOI FORMATSII PRODOLGOVATOGO MOZGA (N. GIGANTOCELLULARIS) U KOSHEK PRI UKACHIVANII]. N. V. Merabishvíli, p. 208-215. 26 refs. [See A68-38231 19-04]

EFFECT OF ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE ON RESISTANCE TO G FORCES [VLIIANIE ADAPTATSII K PONIZHENNOMU PARTSIAL'NOMU DAVLENIIU KISLORODA NA USTOICHIVOST' K PEREGRUZKAM]. P. V. Vasil'ev and N. N. Uglova, p. 215-234. 21 refs. [See A68-38232 19-04]

VARIATION IN THE RESISTANCE OF AN ORGANISM TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE [IZMENENIE USTOICHIVOSTI ORGANIZMA K PEREGRUZKAM POSLE DLITEL'NOGO VOZDEISTVIIA NEBOL'SHIKH KONTSENTRATSII UGLEKISLOTY]. V. P. Zagriadskii and Z. K. Sulimo-Samuillo, p. 234-241. 19 refs. [See A68-38233 19-04]

VARIATION OF THE OXYGEN CONTENT OF BRAIN TISSUE UNDER THE INFLUENCE OF G FORCES OF VARIOUS DIRECTIONS [OB IZMENENII SODERZHANIIA KISLORODA V TKANIAKH MOZGA PRI VOZDEISTVII PEREGRUZOK RAZLICHNOGO NAPRAVLENIIA]. B. M. Savin, p. 241-248. 36 refs. [See A68-38234 19-04]

MORPHOLOGICAL AND SOME HISTOCHEMICAL CHANGES IN THE PRECORONARY REGION OF THE CANINE CEREBRAL CORTEX AS A RESULT OF TRANSVERSE G FORCES [O MORFOLOGICHESKIKH I NEKOTORYKH GISTOKHIMICHESKIKH IZMENENIIAKH V PREKORONARNOI OBLASTI KORY MOZGA SOBAK PRI VOZDEISTVII POPERECHNYKH PEREGRUZOK]. D. I. Medvedev, p. 248-255. 8 refs. [See A68-38235 19-04]

REACTION AND ADAPTATION OF THE CENTRAL NERVOUS SYSTEM TO STAGNANT ANOXIA (RADIAL ACCELERATION IN ONTOGENESIS) [REAKTSIIA I ADAPTATSIIA TSENTRAL'NOI NERVNOI SISTEMY K ZASTOINOI ANOKSII (RADIAL'NOMU USKORENIIU V ONTOGENEZE)]. L. Iilek, S. Troian, I. Fisher, and L. Krulikh, p. 255-264. 14 refs. [See A68-38236 19-04]

X-RAY PHOTOGRAPHS OF THE HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS [RENTGENOGRAMMA GRUDNOI KLETKI CHELOVEKA PRI RAZLICHNYKH PO VELICHINE I NAPRAVLENIIA USKORENIIAKH]. K. I. Murakhovskii, p. 264-270. 20 refs. [See A68-38237 19-04]

CERTAIN CHANGES IN THE LUNGS OF DOGS SUBJECTED TO SINGLE AND MULTIPLE TRANSVERSE G FORCES [O NEKOTORYKH IZMENENIIAKH V LEGKIKH SOBAK PRI VOZDEISTVII ODNOKRATNYKH I MNOGOKRATNYKH POPERECHNYKH PEREGRUZOK]. Iu. N. Korolev, p. 271-275. 9 refs. [See A68-38238 19-04]

EFFECT OF TRANSVERSE ACCELERATIONS ON THE FUNCTIONING OF THE KIDNEYS [VLIIANIE POPERECHNO NAPRAVLENNYKH PEREGRUZOK NA FUNKTSIIU POCHKI]. P. V. Vasil'ev, V. F. Vasil'eva, M. G. Zaks, Iu. V. Nadtochin, and M. M. Sokolova, p. 275-282. [See A68-38239 19-04]

MORPHOLOGICAL CHANGES IN THE KIDNEYS OF DOGS SUBJECTED TO SINGLE TRANSVERSE ACCELERATIONS [MORFOLOGICHESKIE IZMENENIIA V POCHKAKH SOBAK POD VLIIANIEM ODNOKRATNYKH POPERECHNYKH PEREGRUZOK]. V. V. Korolev, p. 282-287. [See A68-38240 19-04]

CONDITION OF THE LYMPHOID ORGANS OF ANIMALS AFTER SINGLE AND MULTIPLE ACCELERATIONS [SOSTOIANIE LIMFOIDNYKH ORGANOV ZHIVOTNYKH PRI ODNOKRATNYKH I MNOGOKRATNYKH PEREGRUZKAKH]. Iu. I. Afanas'ev and Iu. V. Mashkovtsev, p. 288-298. 21 refs. [See A68-38241 19-04]

PATHOMORPHOLOGICAL CHANGES UNDER THE ACTION OF RADIAL ACCELERATIONS IN THE HEAD/LEG DIRECTION [PATOMORFOLOGICHESKIE IZMENENIIA PRI DEISTVII RADIAL'NYKH USKORENII V NAPRAVLENII "GOLOVA-NOGI"]. V. G. Petrukhin and S. S. Markarian, p. 299-308. 14 refs. [See A68-38242 19-04]

EFFECT OF REPEATED ACCELERATIONS ON THE HISTOSTRUCTURE OF THE LIVER [VLIIANIE POVTORNYKH PERE-

GRUZOK NA GISTOSTRUKTURU PECHENI]. E. F. Kotovskii, T. V. Speranskaia, and A. Iatskovskii, p. 308-313. [See A68-38243 19-04]

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON THE HISTOSTRUCTURE OF THE LIVER OF MONKEYS [VLIIANIE MAKSIMAL'NO PERENOSIMYKH PO VREMENI PEREGRUZOK NA GISTOSTRUKTURU PECHENI OBEZ'IAN]. E. F. Kotovskii and T. V. Speranskaia, p. 313-318. 9 refs. [See A68-38244 19-04]

EFFECT OF PROLONGED TRANSVERSE RADIAL ACCELERATIONS ON THE MOTOR ACTIVITY OF THE UPPER SECTION OF THE GASTROINTESTINAL TRACT IN DOGS [VLIIANIE DLITEL'NYKH POPERECHNO NAPRAVLENNYKH RADIAL'NYKH USKORENII NA MOTORNUIU DEIATEL'NOST' VERKHNEGO OTDELA ZHELUDOCHNO-KISHECHNOGO TRAKTA U SOBAK]. A. P. Mukhina and V. E. Potkin, p. 318-322. 8 refs. [See A68-38245 19-04]

ROLE OF THE SMALL INTESTINE IN CONTROLLING THE BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS [K VOPROSU O ROLI TONKOGO KISHECHNIKA V REGULIATSII UROVNIA KHOLESTERINA V KROVI PRI VOZDEISTVII POPERECHNO NAPRAVLENNYKH RADIAL'NYKH USKORENII]. M. S. Martsevich and V. E. Potkin, p. 322-325. 12 refs. [See A68-38246 19-04]

ROLE OF THE CENTRAL NERVOUS SYSTEM IN CONTROLLING THE SECRETORY ACTIVITY OF THE SMALL INTESTINE AFTER PROLONGED EXPOSURES TO TRANSVERSE ACCELERATIONS [O ROLI TSENTRAL'NOI NERVNOI SISTEMY V REGULIATSII SEKRETORNOI DEIATEL'NOSTI TONKOGO KISHECHNIKA POSLI VOZDEISTVIIA DLITEL'NYKH POPERECHNYKH USKORENII]. V. E. Potkin, p. 325-328. [See A68-38247 19-04]

WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES [NEVESOMOST' I KLETOCHNYE DELENIIA V MIKROSPORAKH TRADESCANTIA PALUDOSA]. N. L. Delone, p. 328-337. [See A68-38248 19-04]

RADIATION FACTOR [RADIATSIONNYI FAKTOR].

CHANGES IN CERTAIN BIOCHEMICAL INDICES OF ANIMALS SUBJECTED TO ACCELERATIONS AFTER EXPOSURE TO GAMMA RADIATION [IZMENENIIA NEKOTORYKH BIOKHIMICHESKIKH POKAZATELEI U ZHIVOTNYKH PRI DEISTVII USKORENIIA POSLE γ-OBLUCHENIIA]. E. A. Abaturova, V. V. Antipov, B. I. Davydov, and N. G. Demochkina, p. 338-345. 15 refs. [See A68-38249 19-04]

HEMATOLOGICAL AND PATHOMORPHOLOGICAL CHANGES IN ANIMALS UNDER CONDITIONS OF AN EXPERIMENT SIMULATING THE EFFECT OF IONIZING RADIATION AND FLIGHT FACTORS ON THE ORGANISM [GEMATOLOGICHESKIE I PATOMORFOLOGICHESKIE IZMENENIIA U ZHIVOTNYKH V USLOVIIAKH EKSPERIMENTA, MODELIRUIUSHCHEGO VLIIANIE NA ORGANIZM IONIZIRUIUSHCHEI RADIATSII I FAKTOROV POLETA]. N. A. Gaidamakin, N. N. Dobrov, N. I. Ezenchuk, V. A. Kozlov, and S. G. Kul'kin, p. 346-355. 11 refs. [See A68-38250 19-04]

COMPLEX EFFECT OF CERTAIN TYPES OF IONIZING RADIATION AND DYNAMIC FLIGHT FACTORS ON THE HEMOPOIETIC ORGANS OF MICE (PATHOMORPHOLOGICAL STUDIES) [KOMPLEKSNOE DEISTVIE NEKOTORYKH VIDOV IONIZIRUIUSHCHIKH IZLUCHENII I DINAMICHESKIKH FAKTOROV POLETA NA KROVOTVORNYE ORGANY MYSHEI (PATOMORFOLOGICHESK ISSLEDOVANIIA)]. N. A. Gaidamakin, V. G. Petrukhin, V. V. Antipov, P. O. Saksonov, and V. S. Shashkov, p. 355-367. 15 refs [See A68-38251 19-04]

REACTIVITY STATE OF AN ORGANISM SUBJECTED TO THE COMPLEX EFFECT OF CERTAIN SPACE-FLIGHT FACTORS [SOSTOIANIE REAKTIVNOSTI ORGANIZMA PRI KOMPLEKSNOM VOZDEISTVII NEKOTORYKH FAKTOROV KOSMICHESKOGO POLETA]. V. V. Antipov, B. I. Davydov, E. F. Panchenkova, P. O. Saksonov, and G. A. Chernov, p. 367-381. 16 refs. [See A68-38252 19-04]

RELATIVE BIOLOGICAL EFFECTIVENESS AND THE PATTERN OF RADIATION DAMAGE DUE TO THE ACTION OF IONIZING RADIATIONS WITH VARIOUS LINEAR ENERGY LOSSES [OTNOSITEL'NAIA BIOLOGICHESKAIA EFFEKTIVNOST' I KARTINA LUCHEVOGO PORAZHENIIA PRI DEISTVII IONIZIRUIUSHCHIKH IZLUCHENII S RAZLICHNOI VELICHINOI LINEINYKH POTER' ENERGII]. V. V. Antipov, A. G. Konopliannikov, Iu. B. Kudriashov, and B. N. Tarusov, p. 381-391. 35 refs. [See A68-38253 19-04]

THE RELATIONSHIP OF THE THYROID-GLAND FUNCTION WITH THE CHOLINESTERASE ACTIVITY OF THE HYPOTHALAMUS, THALAMUS, POLIO-, ARCHEO-, AND NEOCORTEX IN DOGS WHICH ENDURED SEVERE RADIATION SICKNESS [SVIAZ' FUNKTSII SHCHITOVIDNOI ZHELEZY S KHOLINESTERAZNOI AKTIVNOST'IU GIPOTELAMUSA, TALAMUSA, POLEO-, ARKHEO- I NEOKORTEKSA U SOBAK, PERENESSHIKH OSTRUIU LUCHEVUIU BOLEZN']. B. I. Davydov and Iu. A. Klassovskii, p. 391-400. 26 refs. [See A68-38254 19-04]

RATE OF POSTRADIATION RECOVERY DURING PARTIAL SCREENING OF THE ORGANS OF THE ABDOMINAL CAVITY [SKOROST' POSTRADIATSIONNOGO VOSSTANOVLENIIA PRI CHASTICHNOM EKRANIROVANII ORGANOV BRIUSHNOI POLOSTI]. B. I. Davydov, V. S. Morozov, and B. L. Razgovorov, p. 400-407. 7 refs. [See A68-38255 19-04]

INVESTIGATION OF THE RELATIVE BIOLOGICAL EFFECTIVENESS OF PROTONS AND HEAVY IONS ON LYSOGENIC BACTERIA [ISSLEDOVANIE OBE PROTONOV I TIAZHELYKH IONOV NA LIZOGENNYKH BAKTERIIAKH]. Iu. G. Grigor'ev, N. I. Rybakov, N. I. Ryzhov, V. I. Popov, T. E. Mashinskaia, M. A. Sychkov, and E. I. Kudriashov, p. 407-412. 16 refs. [See A68-38256 19-04]

DOSE DEPENDENCE AND DYNAMICS OF THE PHYSIOLOGICAL REGENERATION OF THE CORNEAL EPITHELIUM OF MICE SUBJECTED TO PROTON IRRADIATION WITH AN ENERGY OF 630 MEV AND TO Co^{60} γ-RADIATION [DOZOVAIA ZAVISIMOST' I DINAMIKA FIZIOLOGICHESKOI REGENERATSII EPITELIIA ROGOVITS MYSHEI, PODVERGNUTYKH OBLUCHENIIU PROTONAMI S ENERGIEI 630 MEV I γ-IZLUCHENIEM Co^{60}]. V. M. Mastriukova and A. D. Strzhizhovskii, p. 413-424. 26 refs. [See A68-38257 19-04]

CYTOLOGICAL ANALYSIS OF THE DAMAGE TO THE INTESTINAL EPITHELIUM OF MICE SUBJECTED TO IRRADIATION BY PROTONS WITH AN ENERGY OF 630 MEV [TSITOLOGICHESKII ANALIZ PORAZHENIIA KISHECHNOGO EPITELIIA MYSHEI, PODVERGNUTYKH OBLUCHENIIU PROTONAMI S ENERGIEI 630 MEV]. V. M. Mastriukova and A. D. Strzhizhovskii, p. 425-433. 14 refs. [See A68-38258 19-04]

ESTIMATION OF PERMISSIBLE IONIZING RADIATION DOSES BY USING EXTREMAL-ACCELERATION TOLERANCE AS A CRITERION [OTSENKA DOPUSTIMYKH DOZ OBLUCHENIIA IONIZIRUIUSHCHEI RADIATSIEI PO KRITERIIU PERENOSIMOSTI EKSTREMAL'NYKH USKORENII]. B. I. Davydov, V. V. Antipov, and P. P. Saksonov, p. 433-448. 35 refs. [See A68-38259 19-04]

SURVIVAL RATE OF ANIMALS FULLY EXPOSED TO γ-IRRADIATION WITH APPLICATION OF A STOMACH SHIELD [VYZHIVAEMOST' ZHIVOTNYKH PRI OBSHCHEM γ-OBLUCHENII S PRIMENENIEM EKRANIROVANIIA OBLASTI ZHIVOTA]. B. L. Razgovorov and V. S. Morozov, p. 448-459. 19 refs. [See A68-38260 19-04]

RADIATION SAFETY CRITERIA FOR LONG SPACE FLIGHTS [KRITERII RADIATSIONNOI BEZOPASNOSTI DLITEL'NYKH KOSMICHESKIKH POLETOV]. Iu. G. Grigor'ev, E. E. Kovalev, A. V. Lebedinskii, Iu. G. Nefedov, V. G. Vysotskii, N. I. Ryzhov, B. A. Markelov, L. N. Smirennyi, V. E. Dudkin, and N. N. Derbeneva, p. 460-475. 27 refs. [See A68-38261 19-04]

PROBLEM OF JUSTIFYING THE ADMISSIBLE DOSES OF IONIZING RADIATION FOR SPACECRAFT CREW MEMBERS [PROBLEMA OBOSNOVANIIA DOPUSTIMYKH DOZ IONIZIRUIUSHCHEI RADIATSII DLIA CHLENOV EKIPAZHA KOSMICHESKIKH KORABLEI]. Iu. G. Grigor'ev, A. K. Gus'kova, M. P. Domshlak, V. G. Vysotskii, S. A. Raevskaia, B. A. Markelov, and N. G. Darenskaia, p. 476-489. 73 refs. [See A68-38262 19-04]

BASIC PRINCIPLES OF DETERMINING THE OPTIMUM SHIELDING OF NUCLEAR SPACE POWER PLANTS [OSNOVNYE PRINTSIPY OTYSKANIIA OPTIMAL'NOI ZASHCHITY IADERNYKH USTANOVOK KOSMICHESKIKH APPARATOV]. L. N. Veselovskii, E. E. Kovalev, V. G. Kuznetsov, Iu. G. Nefedov, V. I. Popov, and V. A. Sakovich, p. 489-495. 21 refs. [See A68-38263 19-22]

METHODICAL ARTICLES [METODICHESKIE STAT'I].

CLASSIFICATION OF THE ELECTROENCEPHALOGRAM OF A HEALTHY INDIVIDUAL (WITH RESPECT TO PROBLEMS OF PILOT SELECTION) [KLASSIFIKATSIIA ELEKTROENTSEFALOGRAMMY ZDOROVOGO CHELOVEKA (PRIMENITEL'NO K ZADACHAM OTBORA V AVIATSIIU)]. V. B. Malkin, N. M. Asiamolova, and A. K. Kochetov, p. 495-509. 24 refs. [See A68-38264 19-04]

AUTOMATIC PROCESSING OF DATA CONCERNING THE HUMAN EXTERNAL RESPIRATION FUNCTION [AVTOMATICHESKAIA OBRABOTKA DANNYKH FUNKTSII VNESHNEGO DYKHANIIA

CHELOVEKA]. A. M. Zhdanov and K. K. Shcherbakov, p. 509-520. [See A68-38265 19-05]

SOME PROBLEMS ASSOCIATED WITH THE UTILIZATION OF ACCELETRONS (MECHANICALLY CONTROLLED ELECTRON TUBES) IN THE TECHNOLOGY OF MOVING SYSTEMS AND THE OUTLOOK FOR THEIR APPLICATION IN MEDICINE [NEKOTORYE VOPROSY EKSPLUATATSII AKSELETRONOV (MEKHANICHESKI UPRAVLIAEMYKH ELEKTRONNYKH LAMP) V TEKHNIKE DVIZHUSHCHIKHSIA SISTEM I PERSPEKTIVY PRIMENENIIA IKH V MEDITSINE]. A. V. Egorov, p. 520-528. [See A68-38266 19-14]

A68-38214 #

BIOLOGICAL STUDIES ON THE VOSTOK AND VOSKHOD SPACECRAFT [BIOLOGICHESKIE ISSLEDOVANIIA NA KOSMICHESKIKH KORABLIAKH "VOSTOK" I "VOSKHOD"].

V. V. Antipov.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 67-82. 57 refs. In Russian.

Survey of the main results of biological experiments conducted on 11 recovered spacecraft. Analysis of the results indicates that various space-flight factors cause small (but statistically significant) disturbances in the hereditary structures of different biological objects (bone marrow of mice, plant seeds, and lysogenic bacteria). These same factors, however, cause no serious changes in the life functions of mammals and humans. T.M.

A68-38215 #

ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE [ELEKTROENTSEFALOGRAFICHESKIE ISSLEDOVANIIA V KOSMICHESKOI MEDITSINE].

O. G. Gazenko, V. S. Gurfinkel', and V. B. Malkin.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 83-92. In Russian.

Discussion of several practical aspects concerning the use of electroencephalograms (EEGs) in evaluating the functional state of the central nervous system of astronauts. It is shown that the use of EEGs is advantageous for astronaut selection, medical control during preflight preparation, and during the flight itself. The EEG makes it possible to objectively evaluate levels of sleep and consciousness of an astronaut, together with his work capability. T.M.

A68-38216 #

HUMAN PHYSIOLOGICAL REACTIONS UNDER THE ACTION OF TRANSVERSE ACCELERATIONS AFTER PRECEDING HYPODYNAMIA [FIZIOLOGICHESKIE REAKTSII CHELOVEKA PRI DEISTVII POPERECHNYKH PEREGRUZOK POSLE PREDSHESTVUIUSHCHEI GIPODINAMII].

A. R. Kotovskaia, R. A. Vartbaronov, and S. F. Simpura.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 106-117. 22 refs. In Russian.

Comparative analysis of the physiological reactions of Vostok and Voskhod astronauts to transverse accelerations in space and during centrifuge experiments. The ability to sustain accelerations after long-term hypodynamia (imitating certain effects of weightlessness) is examined, along with certain methods of increasing the resistance of the organism by physical excercise, pharmacological techniques, and adaptation to hypoxia in pressure chambers and mountainous environments. T.M.

A68-38217 #

MECHANISM OF CARDIAC-ACTIVITY VARIATION DURING TRANSVERSE ACCELERATIONS [K MEKHANIZMU IZMENENIIA SERDECHNOI DEIATEL'NOSTI PRI POPERECHNO NAPRAVLENNYKH PEREGRUZKAKH].

V. E. Belai, P. V. Vasil'ev, G. D. Glod, and V. G. Petrukhin.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 118-124. 16 refs. In Russian.

Study of certain mechanisms disturbing cardiac activity during transverse accelerations. Long-term transverse accelerations are shown to be accompanied by an intense discharge of myocardium and liver glycogen. Disturbed cardiac activity is correlated with the glycogen content in the myocardium. One of the aspects of the pathogenesis of the exhaustion of the cardiac-activity compensating mechanisms is a sharp decrease in the myocardium energy resources. The normalization of the electrocardiogram pattern during the period after accelerations is shown not to be an indication of the total recovery of the myocardium function. T.M.

A68-38218 #

INFLUENCE OF LONG-TERM TRANSVERSE ACCELERATIONS ON THE FUNCTIONAL STATE OF THE VEGETATIVE NERVOUS SYSTEM [VLIIANIE DLITEL'NYKH POPERECHNYKH PEREGRUZOK NA FUNKTSIONAL'NOE SOSTOIANIE VEGETATIVNOI NERVNOI SISTEMY].

V. E. Belai, P. V. Vasil'ev, and G. D. Glod.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 124-132. 11 refs. In Russian.

Study of the influence of transverse accelerations on the vegetative nervous system of dogs and rabbits with respect to reactions involving adrenalin, acetylcholine, and electrical irritation of the vagus. Changes in the reaction of the organism and irritation of the vagus were observed during a period lasting from 15 to 20 min after accelerations. The changes involve the duration of the individual phases of arterial pressure and cardiac contractions. T.M.

A68-38219 #

SIMULATING THE CONTROL FUNCTION OF THE CARDIOVASCULAR SYSTEM UNDER WEIGHTLESSNESS [O MODELIROVANII FUNKTSII REGULIATSII SERDECHNO-SOSUDISTOI SISTEMY V NEVESOMOSTI].

I. I. Kas'ian and N. A. Chekhonadskii.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 132-140. 9 refs. In Russian.

Investigation of the problem of the application of mathematical simulation methods to the study of the cardiovascular system. Mathematical expressions and electrical-model circuits are given which reflect the general regularities of the system under earth-based and weightlessness conditions. A proposed model is used to study the functional features of the cardiovascular system when performing physical labor under conditions of weightlessness. T.M.

A68-38220 #

REACTION OF THE HUMAN ORGANISM TO THE ACTION OF LANDING DECELERATIONS INCREASING AT HIGH RATES [REAKTSIIA ORGANIZMA CHELOVEKA NA VOZDEISTVIE PEREGRUZOK PRIZEMLENIIA S BOL'SHIMI SKOROSTIAMI NARASTANIIA].

A. S. Barer, S. A. Gozulov, V. A. Degtiarev, V. K. Kostin, V. M. Tardov, V. A. Elivanov, and E. V. Iakovleva.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.

Moscow, Izdatel'stvo Nauka, 1967, p. 140-145. 6 refs. In Russian.

Study of human tolerance to landing decelerations increasing at high rates and of methods to increase the resistance of the organism to these effects. The limits of satisfactory endurance are established, together with the symptoms indicating an approach to these limits. Larger decelerations can be sustained in the breast-to-back direction than in the head-to-pelvis direction. T.M.

A68-38221 #

THE ACTION OF DECELERATIONS ON MAN DURING LANDING IN A CABIN AS A FUNCTION OF THE DEGREE OF SHOCK ABSORP-

TION AND THE STRENGTH OF THE SIDE WIND [VOZDEISTVIE NA CHELOVEKA PEREGRUZOK PRI PRIZEMLENII V KABINE V ZAVISIMOSTI OT STEPENI AMORTIZATSII UDARA I SILY BOKOVOGO VETRA].
G. P. Miroliubov, N. I. Frolov, and B. V. Lemasov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 145-152. In Russian.

Study of cabin-landing conditions as a function of the damping properties of the shock absorbers, the position of the human subject in the seat, and the rate of wind drift. A damping system acting uniformly over a long path ensures safe cabin landing in the sitting or semireclining position with a vertical-descent velocity of 10 m/sec and a minimum damping rate of 8 m/sec. Landing with wind drift is accompanied by a deceleration having horizontal and vertical components. Higher resistance exhibited in the breast-to-back position indicates the necessity of manual or automatic orientation of the cabin during landing. T.M.

A68-38222 #
DISTURBANCES OF THE REGIONAL BLOOD CIRCULATION IN HUMANS SUBJECTED TO LONG-TERM TRANSVERSELY DIRECTED ACCELERATIONS [K VOPROSU O NARUSHENIIAKH REGIONARNOGO KROVOOBRASHCHENIIA U CHELOVEKA PRI DLITEL'NO DEISTVUIUSHCHIKH POPERECHNO NAPRAVLENNYKH USKORENIIAKH].
M. D. Emel'ianov and E. S. Kotova.
(LIFE IN SPACECRAFT; INTERNATIONAL ASTRONAUTICAL FEDERATION, INTERNATIONAL ASTRONAUTICAL CONGRESS, 16TH, ATHENS, GREECE, SEPTEMBER 13-18, 1965, PROCEEDINGS. VOLUME 7, p. 35-38.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 152-155. 13 refs. In Russian.
[For abstract see issue 16, page 2610, Accession no. A67-30755]

A68-38223 #
PROBLEM OF THE GENESIS OF OPTICAL DISORDERS DURING ACCELERATIONS [K VOPROSU O GENEZE ZRITEL'NYKH RASSTROISTV PRI USKORENIIAKH].
B. M. Savin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 155-164. 36 refs. In Russian.

Study of the functional state of the optical analysor during acceleration. It is shown that accelerations have a significant influence on the spontaneous bioelectric activity of different portions of the optical analysor, as well as on the occurrence of effects associated with the action of adequate stimuli. The results indicate that the observed disturbances are of cortical-retinal nature. T.M.

A68-38224 #
CHARACTERISTICS OF HUMAN VEGETATIVE REACTIONS UNDER THE ACTION OF ANGULAR ACCELERATIONS OF DIFFERENT MAGNITUDES AND DURATIONS [K KHARAKTERISTIKE VEGETATIVNYKH REAKTSII U LIUDEI PRI DEISTVII UGLOVYKH USKORENII RAZLICHNOI VELICHINY I DLITEL'NOSTI].
B. I. Poliakov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 165-171. 17 refs. In Russian.

Study of the effects of angular accelerations on the human vegetative nervous system. It is shown that one-time negative accelerations in the range from $15^{o}/sec^{2}$ (duration of 6 sec) to $1200^{o}/sec^{2}$ (duration of 0.15 sec) cause vegetative reactions in the form of slowed breathing and pulse rate and increased arterial pressure. In most cases, the latent period of the reaction was no longer than 20 sec, and the reaction does not depend on the magnitude of the acceleration. The necessity of accounting for a possible influence of orientation effects when qualitatively studying human vestibulovegetative reactions is indicated. T.M.

A68-38225 #
EFFERENT IMPULSATION OF THE VAGUS OF ANIMALS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS [EFFERENTNAIA IMPUL'SATSIIA BLUZHDAIUSHCHEGO NERVA INTAKTNYKH I DELABIRINTIROVANNYKH ZHIVOTNYKH V NEVESOMOSTI].
E. M. Iuganov and V. V. Aleshin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 172-176. 8 refs. In Russian.

Study of the efferent impulsation of the vagus of rabbits with complete and severed labyrinths under conditions of short-term weightlessness. A curtailment of the impulsation is observed in the intact animals and is found to increase during the cumulative action of weightlessness. The nature of the impulsation remains practically unchanged in the animals with severed labyrinths. The results describe the intermediate mechanisms of the origin of vestibulovegetative disturbances. T.M.

A68-38226 #
INTERACTION OF THE FUNCTIONS OF THE SEMICIRCULAR CANALS AND THE OTOLITHIC APPARATUS [K VOPROSU O VZAIMODEISTVII FUNKTSII POLUKRUZHNYKH KANALOV I OTOLITOVOGO APPARATA].
S. S. Markarian.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 176-181. 6 refs. In Russian.

Results of an experimental investigation of the effect of irritation of the otolithic apparatus on the sensory and nystagmic reactions of humans subjected to different amounts of positive and/or negative acceleration. Irritation of the otolithic apparatus, especially by positive acceleration, is found to increase nystagmic reaction. Subjects were also found to perceive the spatial locations of objects falsely, the exact nature of the error varying with the type of acceleration. R.A.F.

A68-38227 #
CUMULATION OF IRRITATIONS DURING MOTION SICKNESS [O KUMULIATSII RAZDRAZHENII PRI BOLEZNI DVIZHENIIA].
I. D. Pestov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 181-187. 15 refs. In Russian.

Experimental test of the hypothesis that the vomitory center stores irritations and then periodically discharges in fits of vomiting and other behavior characteristics of motion sickness. Dogs were subjected to nonuniform rotation and rocking and then injected subliminally with apomorphine at regular intervals. It was found that the greater the irritation of the vomitory center, the shorter the time interval between apomorphine injections and the subsequent attack of vomiting, whereas the number of attacks was independent of the level of irritation of the center. Moreover, the greater the number of apomorphine injections already given, the smaller the dose required to induce vomiting. These results are seen to support the original hypothesis, and it is thought that they may be of use in devising prophylactic measures against motion sickness. R.A.F.

A68-38228 #
MATHEMATICAL MODELING OF THE FUNCTION OF THE VESTIBULAR APPARATUS IN WEIGHTLESSNESS [MATEMATICHESKOE MODELIROVANIE FUNKTSII VESTIBULIARNOGO APPARATA V NEVESOMOSTI].
N. A. Chekhonadskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].

Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 188-198. 14 refs. In Russian.

Derivation of a mathematical model of the otoconia, as a means for more detailed study of the vestibular analysor under conditions of weightlessness. Among the problems considered are the chain structure of the otolithic portion of the vestibular apparatus, the vestibular apparatus as an automatic measuring and computing device, comparison of the pulse frequencies of the left and right vestibular apparatus and their paired operation, and the reaction of the model to weightlessness and rocking. R.A.F.

A68-38229 #
APPLICATION OF CORRELATION ANALYSIS TO INVESTIGATING THE REACTION OF INDIVIDUAL NERVE ELEMENTS OF THE FELINE CEREBRAL CORTEX TO IRRITATION OF THE VESTIBULAR APPARATUS BY BOUNCING [PRIMENENIE KORRELIATSIONNOGO ANALIZA DLIA ISSLEDOVANIIA REAKTSII ODINOCHNYKH NERVNYKH ELEMENTOV GOLOVNOGO MOZGA KOSHEK NA RAZDRAZHENIE VESTIBULIARNOGO APPARATA UKACHIVANIEM].
M. G. Kutateladze, N. V. Merabishvili, and M. D. Venttsel'.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 199-204. In Russian.

Analysis of the reaction of individual neural elements in the visual region of the feline cerebral cortex (the seventeenth and eighteenth Brodmann's areas) and in the reticular formation of the feline medulla oblongata (n. gigantocellularis) after the otholithic apparatus is irritated by bouncing. Cats were narcotized and subjected to bouncing at vertical accelerations from 0.1 to 2 g. The spike activity of individual neurons was recorded extracellularly and its periodicity was determined by correlation analysis. Neurons in the reticular formation of the medulla oblongata were found to react to the changes in acceleration, but the neurons in the visual region did not. R.A.F.

A68-38230 #
REACTION OF INDIVIDUAL NEURONS OF THE AUDITORY REGION OF THE FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF THE VESTIBULAR APPARATUS [REAKTSIIA ODINOCHNYKH NEIRONOV SLUKHOVOI OBLASTI KORY GOLOVNOGO MOZGA KOSHEK NA ADEKVATNOE RAZDRAZHENIE VESTIBULIARNOGO APPARATA].
M. G. Kutateladze.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 204-208. 13 refs. In Russian.

Experimental study of one aspect of the interaction of the vestibular and auditory analysors. The extracellular activity of neurons in the auditory regions of the cerebral cortexes of cats were recorded after the animals had been narcotized and then bounced up and down for various lengths of time. Sufficient irritation or the vestibular apparatus is found to have a nonspecific effect on the functional condition of the auditory region. R. A. F.

A68-38231 #
INVESTIGATION OF THE ACTIVITY OF INDIVIDUAL NEURONS OF THE RETICULAR FORMATION OF THE MEDULLA OBLONGATA (N. GIGANTOCELLULARIS) IN CATS DURING BOUNCING [ISSLEDOVANIE AKTIVNOSTI OTDEL'NYKH NEIRONOV RETIKULIARNOI FORMATSII PRODOLGOVATOGO MOZGA (N. GIGANTOCELLULARIS) U KOSHEK PRI UKACHIVANII].
N. V. Merabishvili.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 208-215. 26 refs. In Russian.

Contribution to the study of the functional connection between the vestibular centers and the recticular formation. The reaction of neurons in the gigantocellular center of the reticular formation to linear acceleration was studied. Narcotized cats were subjected to vertical acceleration of from 0.8 to 2 g, and spontaneous neuron activity was recorded by implanted electrodes. Four types of spontaneous activity were observed - rhythmic, arhythmic, transitional, and dual spike doublets. Different classes of neuron are distinguished and discussed in terms of their spontaneous activity. R. A. F.

A68-38232 #
EFFECT OF ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE ON RESISTANCE TO G FORCES [VLIIANIE ADAPTATSII K PONIZHENNOMU PARTSIAL'NOMU DAVLENIIU KISLORODA NA USTOICHIVOST' K PEREGRUZKAM].
P. V. Vasil'ev and N. N. Uglova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 215-234. 21 refs. In Russian.

Experimental investigation of the effect of adaptation to hypoxia on the resistance of animals to transverse g forces. Adaptation to hypoxia is found to increase the animals' resistance to the effects to transverse g forces by 24 to 46% after an adaptation period ranging from one to five days, with the effect lasting from 10 to 18 days. The degree of increase in resistance was found to be determined by the manner and duration of the conditioning. The animals' consumption of oxygen in the quiescent state in a normal atmosphere was the same after the adaptation as it was before. R.A.F.

A68-38233 #
VARIATION IN THE RESISTANCE OF AN ORGANISM TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE [IZMENENIE USTOICHIVOSTI ORGANIZMA K PEREGRUZKAM POSLE DLITEL'NOGO VOZDEISTVIIA NEBOL'SHIKH KONTSENTRATSII UGLEKISLOTY].
V. P. Zagriadskii and Z. K. Sulimo-Samuillo.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 234-241. 19 refs. In Russian.

Investigation of the effect of long-term increased concentrations of CO_2 on the physiological functioning of an animal when other conditions are not normal. It is found that prolonged exposure to CO_2 levels slightly higher than normal decreases the resistance of rabbits to transverse g forces. R.A.F.

A68-38234 #
VARIATION OF THE OXYGEN CONTENT OF BRAIN TISSUE UNDER THE INFLUENCE OF G FORCES OF VARIOUS DIRECTIONS [OB IZMENENII SODERZHANIIA KISLORODA V TKANIAKH MOZGA PRI VOZDEISTVII PEREGRUZOK RAZLICHNOGO NAPRAVLENIIA].
B. M. Savin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 241-248. 36 refs. In Russian.

Experimental investigation of the degree of hypoxia in animals subjected to g forces in various directions. The oxygen content of the brain tissues of cats and rabbits subjected to g forces in the head-pelvis and pelvis-head directions was measured. It is found that the oxygen content is a function of both the magnitude and the direction of the g force. The decrease is more pronounced for g forces in the pelvis-tail direction than for similar g forces in the opposite direction. R.A.F.

A68-38235 #
MORPHOLOGICAL AND SOME HISTOCHEMICAL CHANGES IN THE PRECORONARY REGION OF THE CANINE CEREBRAL CORTEX AS A RESULT OF TRANSVERSE G FORCES [O MORFOLOGICHESKIKH I NEKOTORYKH GISTOKHIMICHESKIKH IZMENENIIAKH V PREKORONARNOI OBLASTI KORY MOZGA SOBAK PRI VOZDEISTVII POPERECHNYKH PEREGRUZOK].
D. I. Medvedev.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 248-255. 8 refs. In Russian.

Results of microscopic and chemical studies of tissue from the precoronary region of the cerebral cortexes of dogs subjected to various g forces for different periods of time. Several morphological and histochemical changes are noted in the tissue, depending partly on the duration of the acceleration. Most of the changes are thought to result from cortical retardation processes necessary to restore the nerve cells to normal operation. R.A.F.

A68-38236 #
REACTION AND ADAPTATION OF THE CENTRAL NERVOUS SYSTEM TO STAGNANT ANOXIA (RADIAL ACCELERATION IN ONTOGENESIS) [REAKTSIIA I ADAPTATSIIA TSENTRAL'NOI NERVNOI SISTEMY K ZASTOINOI ANOKSII (RADIAL'NOMU USKORENIIU V ONTOGENEZE)].
L. Ilek, S. Troian, I. Fisher, and L. Krulikh.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 255-264. 14 refs. In Russian.

Measurement of the effect of high g forces on the central nervous system. The resistance of the central nervous system to stagnant anoxia and biochemical and histopathological changes in the central nervous system caused by stagnant anoxia are measured and discussed. The adaptation of the central nervous system to repeated stagnant anoxia is examined, and some factors affecting the resistance of the central nervous system to stagnant anoxia are singled out. R.A.F.

A68-38237 #
X-RAY PHOTOGRAPHS OF THE HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS [RENTGENOGRAMMA GRUDNOI KLETKI CHELOVEKA PRI RAZLICHNYKH PO VELICHINE I NAPRAVLENIIA USKORENIIAKH].
K. I. Murakhovskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 264-270. 20 refs. In Russian.

Discussion of thoracic X-ray photographs of human subjects being subjected to accelerations up to 12 g. The accelerations were applied in the spine-chest direction, at angles of 65, 80, and 90° to the longitudinal axis of the subject's body. Attention is given to the degree of chest flattening, the position of the diaphragm and the configuration of its cupulae, the cross section of the pulmonary region, the transparency of various areas in the pulmonary region, the changes in the positions of the mediastinal organs (the trachea, the radix pulmonis, and the arch of the aorta), and the position and shape of the heart shadow. R.A.F.

A68-38238 #
CERTAIN CHANGES IN THE LUNGS OF DOGS SUBJECTED TO SINGLE AND MULTIPLE TRANSVERSE G FORCES [O NEKOTORYKH IZMENENIIAKH V LEGKIKH SOBAK PRI VOZDEISTVII ODNOKRATNYKH I MNOGOKRATNYKH POPERECHNYKH PEREGRUZOK].
Iu. N. Korolev.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 271-275. 9 refs. In Russian.

Experimental investigation of the effect of single and multiple accelerations on the lungs of animals. Dogs were subjected to acceleration in the chest-spine direction. Some were subjected to 12 g for one minute; others were subjected to increasing accelerations, with a different duration for each level and a maximum of 12 g. Lung tissue was then examined using hematoxylineosin, azure II/eosin, Mallory, and van Gieson stains; the Taenzer-Unna method; and the Schick test with a salivary amylase control. Changes in the vascular and parenchymal structure of the lungs caused by the acceleration are discussed. R.A.F.

A68-38239 #
EFFECT OF TRANSVERSE ACCELERATIONS ON THE FUNCTIONING OF THE KIDNEYS [VLIIANIE POPERECHNO NAPRAVLENNYKH PEREGRUZOK NA FUNKTSIIU POCHKI].
P. V. Vasil'ev, V. F. Vasil'eva, M. G. Zaks, Iu. V. Nadtochin, and M. M. Sokolova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 275-282. In Russian.

Study of the effect of accelerations of various magnitudes on the functional capacity of the kidneys of seven dogs, and analysis of certain mechanisms governing the changes noted. The test animals were subjected to centrifuging at 5 g's for 3 min, 8 g's for 3 min, and 12 g's for 1 min. On the basis of the results obtained, it is hypothesized that the changes noted (a slight osmotic diuresis, and an increase in the excretion of sodium and potassium) are not related to any mechanical or other direct actions on the kidneys, but are caused by neural-hormonal factors, in particular, the activation of the hypothalamus-hypophysis system. It is therefore assumed that the applied accelerations did not cause any significant changes in the functioning of the kidneys. A.B.K.

A68-38240 #
MORPHOLOGICAL CHANGES IN THE KIDNEYS OF DOGS SUBJECTED TO SINGLE TRANSVERSE ACCELERATIONS [MORFOLOGICHESKIE IZMENENIIA V POCHKAKH SOBAK POD VLIIANIEM ODNOKRATNYKH POPERECHNYKH PEREGRUZOK].
V. V. Korolev.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 282-287. In Russian.

Study of the morphological changes occurring in the kidneys of dogs subjected to single chest-to-back accelerations of 8 g's for 3 min. Changes in the intrarenal blood circulation and dystrophic disturbances of the epithelium of the nephron caniculi are noted in the test animals in the first hours and days after the experiment, but these changes are found to be of reversible nature, since they are eventually compensated to a considerable extent. A.B.K.

A68-38241 #
CONDITION OF THE LYMPHOID ORGANS OF ANIMALS AFTER SINGLE AND MULTIPLE ACCELERATIONS [SOSTOIANIE LIMFOIDNYKH ORGANOV ZHIVOTNYKH PRI ODNOKRATNYKH I MNOGOKRATNYKH PEREGRUZKAKH].
Iu. I. Afanas'ev and Iu. V. Mashkovtsev.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 288-298. 21 refs. In Russian.

Discussion of phase modifications established in the function of the spleen and lymphoid system of a group of 42 dogs subjected to single and multiple accelerations at 3 to 12 g. The various changes observed in the lymphoid ganglia and the spleen are analyzed in detail, taking into account factors associated with acceleration, such as hypoxia, changes in neurohormonal control, blood redistribution, and stresses due to fluid deposition. V.Z.

A68-38242 #
PATHOMORPHOLOGICAL CHANGES UNDER THE ACTION OF RADIAL ACCELERATIONS IN THE HEAD/LEG DIRECTION [PATOMORFOLOGICHESKIE IZMENENIIA PRI DEISTVII RADIAL'NYKH USKORENII V NAPRAVLENII "GOLOVA-NOGI"].
V. G. Petrukhin and S. S. Markarian.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 299-308. 14 refs. In Russian.

Study of the pathomorphological changes in dogs, caused by rotation about an axis passing through the pelvis at 0, 20, and 70° angles with respect to the body. It is found that head-level accelerations of 2.4 g and higher produce hemorrhages, edema, and distrophy.

in the cerebrum, the myocardium, and the lungs as well as in other organs. Cases of mortality occurred occasionally at accelerations above 6 g. The occurrence of hydrocephalus, myelin fiber disintegration, gangliar cell destruction, cardiac myomalacia and thrombosis, pneumosclerosis, and certain liver disorders is observed after multiple accelerations. V.Z.

A68-38243 #
EFFECT OF REPEATED ACCELERATIONS ON THE HISTOSTRUCTURE OF THE LIVER [VLIIANIE POVTORNYKH PEREGRUZOK NA GISTOSTRUKTURU PECHENI].
E. F. Kotovskii, T. V. Speranskaia, and A. Iatskovskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 308-313. In Russian.

Study of the effect of spine-to-chest accelerations at 3 to 12 g, applied at intervals of up to 48 hr, on the histostructure of the liver of a group of 14 dogs destroyed 1 hr or 1, 3, 7, 15, and 30 days after the final centrifugation. Healing of liver tissue damages sustained by dogs under acceleration is observed in dogs destroyed 30 and 60 days after exposures. V.Z.

A68-38244 #
EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON THE HISTOSTRUCTURE OF THE LIVER OF MONKEYS [VLIIANIE MAKSIMAL'NO PERENOSIMYKH PO VREMENI PEREGRUZOK NA GISTOSTRUKTURU PECHENI OBEZ'IAN].
E. F. Kotovskii and T. V. Speranskaia.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 313-318. 9 refs. In Russian.

Study of the effect of transverse accelerations at 12 g, maximally endurable in time, on the tissues of the liver of monkeys. Venous hyperemia, destruction of blood vessel walls, hemorrhage, blood vessel thrombosis, cytoplasm vacuolization and fatty degeneration, as well as RNA and α-aminoacid content decreases are established in the livers of experimental monkeys. The reversible nature of all these disorders is noted. V.Z.

A68-38245 #
EFFECT OF PROLONGED TRANSVERSE RADIAL ACCELERATIONS ON THE MOTOR ACTIVITY OF THE UPPER SECTION OF THE GASTROINTESTINAL TRACT IN DOGS [VLIIANIE DLITEL'NYKH POPERECHNO NAPRAVLENNYKH RADIAL'NYKH USKORENII NA MOTORNUIU DEIATEL'NOST' VERKHNEGO OTDELA ZHELUDOCHNO-KISHECHNOGO TRAKTA U SOBAK].
A. P. Mukhina and V. E. Potkin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 318-322. 8 refs. In Russian.

Study of the periodic motor activity of the stomach and the duodenum in a group of dogs with Basov's gastrocolic fistulas, subjected to 3-min radial spine-to-chest accelerations at 8 g. The changes observed in the periodic motor activity after acceleration are discussed. V.Z.

A68-38246 #
ROLE OF THE SMALL INTESTINE IN CONTROLLING THE BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS [K VOPROSU O ROLI TONKOGO KISHECHNIKA V REGULIATSII UROVNIA KHOLESTERINA V KROVI PRI VOZDEISTVII POPERECHNO NAPRAVLENNYKH RADIAL'NYKH USKORENII].
M. S. Martsevich and V. E. Potkin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 322-325. 12 refs. In Russian.

Study of the relation between the blood cholesterol content and the cholesterol excretion in the small intestine, carried out on a group of dogs having isolated loops in the upper portion of the small intestine and subjected to 8 g/min spine-to-breast accelerations in a centrifuge. Higher cholesterol contents in the blood and lower cholesterol contents in the intestinal juice are established in experimental dogs exposed to acceleration. V.Z.

A68-38247 #
ROLE OF THE CENTRAL NERVOUS SYSTEM IN CONTROLLING THE SECRETORY ACTIVITY OF THE SMALL INTESTINE AFTER PROLONGED EXPOSURES TO TRANSVERSE ACCELERATIONS [O ROLI TSENTRAL'NOI NERVNOI SISTEMY V REGULIATSII SEKRETORNOI DEIATEL'NOSTI TONKOGO KISHECHNIKA POSLI VOZDEISTVIIA DLITEL'NYKH POPERECHNYKH USKORENII].
V. E. Potkin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 325-328. In Russian.

Study of the role of the central nervous system in controlling the secretory activity of the small intestine in a group of dogs with denervated sections and loops of the small intestine, subjected to 3-min 8-g transverse accelerations with acceleration increments of 0.2 g/sec. Lower amounts of intestinal juice in the denervated sections of the small intestine, a lower lysozyme activity and higher enteropeptidase, amylase, and alkaline phosphatase activities are generally established in experimental dogs exposed to accelerations. The absence of changes in the amount of excreted juice on the first day after exposure suggests, however, that the central nervous system has an important role in controlling the secretory activity of the small intestine. V.Z.

A68-38248 #
WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES [NEVESOMOST' I KLETOCHNYE DELENIIA V MIKROSPORAKH TRADESCANTIA PALUDOSA].
N. L. Delone.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 328-337. In Russian.

Discussion of the mitotic deviations established in Tradescantia paludosa microspores carried by the Vostok 1, 3, 4, 5, and 6 spacecraft. The morphological features of the five types of deviations revealed in microspores after 1 to 120 hr of weightlessness are described and are shown in a line drawing. The deviation occurring the earliest is identified as one involving a change in the spin-axis direction, with metaphase and telophase chromosomes and the nuclei in the binuclear pollen positioned in a plane different from the normal plane. V.Z.

A68-38249 #
CHANGES IN CERTAIN BIOCHEMICAL INDICES OF ANIMALS SUBJECTED TO ACCELERATIONS AFTER EXPOSURE TO GAMMA RADIATION [IZMENENIIA NEKOTORYKH BIOKHIMICHESKIKH POKAZATELEI U ZHIVOTNYKH PRI DEISTVII USKORENIIA POSLE γ-OBLUCHENIIA].
E. A. Abaturova, V. V. Antipov, B. I. Davydov, and N. G. Demochkina.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 338-345. 15 refs. In Russian.

Study of the tissue respiration, the anaerobic glycolysis, and the dehydrase activity in the cerebrum, myocardium, femoral muscle, and small intestines of groups of 90 mice subjected to centrifugation for 1 hr at 10 g or 5 min at 40 g following a single exposure to a 700 r dose of Co^{60} gamma radiation given 10 days before. The various changes revealed in experimental mice after these exposures are discussed. The disorders established in the carbohydrate metabolism are linked to the buildup of incompletely oxidized metabolites in the tissues. V.Z.

A68-38250 #
HEMATOLOGICAL AND PATHOMORPHOLOGICAL CHANGES IN ANIMALS UNDER CONDITIONS OF AN EXPERIMENT SIMULATING THE EFFECT OF IONIZING RADIATION AND FLIGHT FACTORS ON THE ORGANISM [GEMATOLOGICHESKIE I PATOMORFOLOGICHESKIE IZMENENIIA U ZHIVOTNYKH V USLOVIIAKH EKSPERIMENTA, MODELIRUIUSHCHEGO VLIIANIE NA ORGANIZM IONIZIRUIUSHCHEI RADIATSII I FAKTOROV POLETA].
N. A. Gaidamakin, N. N. Dobrov, N. I. Ezenchuk, V. A. Kozlov, and S. G. Kul'kin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 346-355. 11 refs. In Russian.

Results of a pathomorphological, hematological, and histological examination of the spleen, lung, liver, stomach wall, and marrow of a group of 25 guinea pigs given adrenocorticotropic hermone injection followed by exposure to various doses of ionizing radiation in an attempt to simulate the effects of a space-flight environment. The various changes established in the erythrocyte, leucocyte, and eosinophil populations, in the spleen follicles and in the other organs are discussed. V. Z.

A68-38251 #
COMPLEX EFFECT OF CERTAIN TYPES OF IONIZING RADIATION AND DYNAMIC FLIGHT FACTORS ON THE HEMOPOIETIC ORGANS OF MICE (PATHOMORPHOLOGICAL STUDIES) [KOMPLEKSNOE DEISTVIE NEKOTORYKH VIDOV IONIZIRUIUSHCHIKH IZLUCHENII I DINAMICHESKIKH FAKTOROV POLETA NA KROVOTVORNYE ORGANY MYSHEI (PATOMORFOLOGICHESKIE ISSLEDOVANIIA)].
N. A. Gaidamakin, V. G. Petrukhin, V. V. Antipov, P. P. Saksonov, and V. S. Shashkov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 355-367. 15 refs. In Russian.

Study of the dynamics of pathomorphological changes in the spleen and marrow in 287 male mice (divided into 11 groups) exposed to various doses of proton and gamma radiation preceded or followed by a single 1-hr exposure to a 10-g vibration at 70 Hz. The various manifestations of radiation sickness observed in the experimental animals are discussed. V. Z.

A68-38252 #
REACTIVITY STATE OF AN ORGANISM SUBJECTED TO THE COMPLEX EFFECT OF CERTAIN SPACE-FLIGHT FACTORS [SOSTOIANIE REAKTIVNOSTI ORGANIZMA PRI KOMPLEKSNOM VOZDEISTVII NEKOTORYKH FAKTOROV KOSMICHESKOGO POLETA].
V. V. Antipov, B. I. Davydov, E. F. Panchenkova, P. O. Saksonov, and G. A. Chernov.
(Mezhdunarodnyi Astronavticheskii Kongress, 16th, Athens, Greece, Sept. 13-18, 1965.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 367-381. 16 refs. In Russian.

Study of the effect of vibration and acceleration on the outcome of the radiation sickness in groups of 1760 mice, 120 rats, and 20 dogs exposed to various doses of gamma-ray, proton, and X-ray radiation. Tabulated lifetime, survival rate, and mortality data are given for various combinations of 400 to 1300-rad radiation doses preceded or followed by 15 to 30-min accelerations at 8 to 10 g and/or 60-min vibrations at 70 and 700 Hz. The substantial but nonuniform effects of these dynamic conditions on the reaction of animal organisms to radiation are discussed in detail. V. Z.

A68-38253 #
RELATIVE BIOLOGICAL EFFECTIVENESS AND THE PATTERN OF RADIATION DAMAGE DUE TO THE ACTION OF IONIZING RADIATIONS WITH VARIOUS LINEAR ENERGY LOSSES [OTNOSITEL'NAIA BIOLOGICHESKAIA EFFEKTIVNOST' I KARTINA LUCHEVOGO PORAZHENIIA PRI DEISTVII IONIZIRUIUSHCHIKH IZLUCHENII S RAZLICHNOI VELICHINOI LINEINYKH POTER' ENERGII].
V. V. Antipov, A. G. Konopliannikov, Iu. B. Kudriashov, and B. N. Tarusov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 381-391. 35 refs. In Russian.

Derivation of experimental data concerning the biological effectiveness of ionizing radiations with various linear energy losses as a function of severe manifestations of radiation effects. A pattern of radiation damage in animals for the different types of radiation is established, and the possibility of the development of healing processes is evaluated. The radiation considered included 660-MeV protons, gamma rays, X rays, and fission neutrons. T. M.

A68-38254 #
THE RELATIONSHIP OF THE THYROID-GLAND FUNCTION WITH THE CHOLINESTERASE ACTIVITY OF THE HYPOTHALAMUS, THALAMUS, POLIO-, ARCHEO-, AND NEOCORTEX IN DOGS WHICH ENDURED SEVERE RADIATION SICKNESS [SVIAZ' FUNKTSII SHCHITOVIDNOI ZHELEZY S KHOLINESTERAZNOI AKTIVNOST'IU GIPOTELAMUSA, TALAMUSA, POLEO-, ARKHEO- I NEOKORTEKSA U SOBAK, PERENESSHIKH OSTRUIU LUCHEVUIU BOLEZN'].
B. I. Davydov and Iu. A. Klassovskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 391-400. 26 refs. In Russian.

Experimental study of the relationship between the functional state of the thyroid gland in irradiated dogs and the cholinesterase activity in the hypothalamus, thalamus, cerebellum, and the phylogenetically differing cortical structures of the polio-, archeo, and neocortex. Eighteen male dogs were subjected to a 400-r dose of gamma radiation, and the function of the thyroid gland was studied over a period of 9 to 14 months after irradiation. The effects of irradiation are discussed in detail. T. M.

A68-38255 #
RATE OF POSTRADIATION RECOVERY DURING PARTIAL SCREENING OF THE ORGANS OF THE ABDOMINAL CAVITY [SKOROST' POSTRADIATSIONNOGO VOSSTANOVLENIIA PRI CHASTICHNOM EKRANIROVANII ORGANOV BRIUSHNOI POLOSTI].
B. I. Davydov, V. S. Morozov, and B. L. Razgovorov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 400-407. 7 refs. In Russian.

Examination of the influence of partial screening of the abdominal organs (or individual parts of the body) on the rate of postradiation recovery processes in 410 male white mice and 600 male and female rats. The animals were subjected to gamma radiation at a dose of 12 r/min. Some animals were subjected to further radiation with partial screening, and the results of the study are given in terms of the amount of residual radiation damage after different lengths of time. T. M.

A68-38256 #
INVESTIGATION OF THE RELATIVE BIOLOGICAL EFFECTIVENESS OF PROTONS AND HEAVY IONS ON LYSOGENIC BACTERIA [ISSLEDOVANIE OBE PROTONOV I TIAZHELYKH IONOV NA LIZOGENNYKH BAKTERIIAKH].
Iu. G. Grigor'ev, N. I. Rybakov, N. I. Ryzhov, V. I. Popov, T. E. Mashinskaia, M. A. Sychkov, and E. I. Kudriashov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 407-412. 16 refs. In Russian.

Experimental study of the relative biological effectiveness of protons (with energies from 630 to 50 MeV) and accelerated heavy carbon ions (with an energy of 36 Mev) on the lysogenic bacteria E.

coli K-12 (λ). Data are presented concerning the influence of the irradiation conditions and certain modifying factors on the radiation sensitivity of lysogenic bacteria irradiated by protons. The intracellular development of the moderate phage (λ) is examined for both types of irradiation. T.M.

A68-38257 #
DOSE DEPENDENCE AND DYNAMICS OF THE PHYSIOLOGICAL REGENERATION OF THE CORNEAL EPITHELIUM OF MICE SUBJECTED TO PROTON IRRADIATION WITH AN ENERGY OF 630 MEV AND TO Co^{60} γ-RADIATION [DOZOVAIA ZAVISIMOST' I DINAMIKA FIZIOLOGICHESKOI REGENERATSII EPITELIIA ROGOVITS MYSHEI, PODVERGNUTYKH OBLUCHENIIU PROTONAMI S ENERGIEI 630 MEV I γ-IZLUCHENIEM Co^{60}].
V. M. Mastriukova and A. D. Strzhizhovskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 413-424. 26 refs. In Russian

Investigation of the specific biological influence and the relative biological effectiveness of high-energy protons (630 MeV) on the dynamics of the physiological regeneration of the corneal epithelium of mice, using Co^{60} gamma irradiation as a comparative standard. The animals were exposed to proton doses of 100, 200, 700, and 1100 rad, and to gamma-radiation doses of 200 and 700 rad. The results are discussed in terms of the cellular reproduction activity, chromosome aberrations, and the number of cells in the microscope field of view. It is shown that the corneal epithelium tissue is relatively resistant to radiation. T.M.

A68-38258 #
CYTOLOGICAL ANALYSIS OF THE DAMAGE TO THE INTESTINAL EPITHELIUM OF MICE SUBJECTED TO IRRADIATION BY PROTONS WITH AN ENERGY OF 630 MEV [TSITOLOGICHESKII ANALIZ PORAZHENIIA KISHECHNOGO EPITELIIA MYSHEI, PODVERGNUTYKH OBLUCHENIIU PROTONAMI S ENERGIEI 630 MEV].
V. M. Mastriukova and A. D. Strzhizhovskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 425-433. 14 refs. In Russian.

Results of an experimental study of the biological influence of high-energy protons (630 MeV) on the epithelium cells of the duodenum in mice. The animals were subjected to proton doses of 200, 700, and 1100 rad. The results of a cytological analysis are discussed in terms of the number of epithelium cells along the mean line of the crypt and the villus, the mitotic index of the crypt epithelium, and the relative content of aberrant mitoses in the late anaphase and early telophase. T.M.

A68-38259 #
ESTIMATION OF PERMISSIBLE IONIZING RADIATION DOSES BY USING EXTREMAL-ACCELERATION TOLERANCE AS A CRITERION [OTSENKA DOPUSTIMYKH DOZ OBLUCHENIIA IONIZIRUIUSHCHEI RADIATSIEI PO KRITERIIU PERENOSIMOSTI EKSTREMAL'NYKH USKORENII].
B. I. Davydov, V. V. Antipov, and P. P. Saksonov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 433-448. 35 refs. In Russian.

Study of the mortality rate of 1320 white mice given ionizing radiation doses from 100 to 4000 rem followed by daily 3-min exposures to spine-to-chest acceleration at 44 g for a period of 45 days. Statistical treatment and interpolation of the results shows that the survival rate of experimental mice is a function of the radiation doses. A formula is given to describe this dependence. Extrapolation of the results to a human organism suggests that radiation doses from 50 to 90 rem sustained for a period of 200 days may not affect the acceleration stability of man. V. Z.

A68-38260 #
SURVIVAL RATE OF ANIMALS FULLY EXPOSED TO γ-IRRADIATION WITH APPLICATION OF A STOMACH SHIELD [VYZHIVAEMOST' ZHIVOTNYKH PRI OBSHCHEM γ-OBLUCHENII S PRIMENENIEM EKRANIROVANIIA OBLASTI ZHIVOTA].
B. L. Razgovorov and V. S. Morozov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 448-459. 19 refs. In Russian.

Experimental investigation of the survival rate of rats subjected to an overall Co^{60} γ irradiation ranging from 1000 to 1950 rad, as a function of the dimensions, thickness, and type (material) of stomach shielding. The results, given in the form of graphs and tables, show that, for proper widths and thicknesses of the shield, stomach shielding substantially increases the survival rate. The question of whether stomach shielding is superior to pharmacochemical methods of protection is examined. V. P.

A68-38261 #
RADIATION SAFETY CRITERIA FOR LONG SPACE FLIGHTS [KRITERII RADIATSIONNOI BEZOPASNOSTI DLITEL'NYKH KOSMICHESKIKH POLETOV].
Iu. G. Grigor'ev, E. E. Kovalev, A. V. Lebedinskii, Iu. G. Nefedov, V. G. Vysotskii, N. I. Ryzhov, B. A. Markelov, L. N. Smirennyi, V. E. Dudkin, and N. N. Derbeneva.
(Mezhdunarodnyi Simpozium po Osnovnym Problemam Zhizni Cheloveka v Kosmicheskom Prostranstve, 2nd, Paris, France, June 14-18, 1965.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 460-475. 27 refs. In Russian.

Discussion of general radiation safety problems of manned space flights of the future. Onboard radiation shielding equipment, onboard radiation dosimetry and medical care, and a ground radiation safety service are considered as components of a spacecraft radiation safety system. Galactic cosmic rays, the Van Allen radiation belts, and artificial nuclear explosions are discussed as sources of radiation to be coped with. Permissible radiation levels and doses are outlined. Radiation safety criteria for a lunar flight are defined. V. Z.

A68-38262 #
PROBLEM OF JUSTIFYING THE ADMISSIBLE DOSES OF IONIZING RADIATION FOR SPACECRAFT CREW MEMBERS [PROBLEMA OBOSNOVANIIA DOPUSTIMYKH DOZ IONIZIRUIUSHCHEI RADIATSII DLIA CHLENOV EKIPAZHA KOSMICHESKIKH KORABLEI].
Iu. G. Grigor'ev, A. K. Gus'kova, M. P. Domshlak, V. G. Vysotskii, S. A. Raevskaia, B. A. Markelov, and N. G. Darenskaia.
(Mezhdunarodnyi Astronavticheskii Kongress, 16th, Athens, Greece, Sept. 13-18, 1965.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 476-489. 73 refs. In Russian.

Discussion of the value of the admissible doses of galactic cosmic radiation, radiation from the belts, and radiation during solar flares. The paper is based on an extensive survey of the literature concerning the current experience of accidentally irradiated individuals and of the Hiroshima and Nagasaki victims. The radiation doses are classified into an admissible dose, a justified risk dose, and a critical dose. A careful analysis of data concerning chronic irradiation of humans and animals indicates that a total dose of 100 rem per year in the course of three years will not impare the efficiency of crew members and may be tentatively taken as the dose of justified risk. V. P.

A68-38264 #
CLASSIFICATION OF THE ELECTROENCEPHALOGRAM OF A HEALTHY INDIVIDUAL (WITH RESPECT TO PROBLEMS OF PILOT SELECTION) [KLASSIFIKATSIIA ELEKTROENTSEFALOGRAMMY ZDOROVOGO CHELOVEKA (PRIMENITEL'NO K ZADACHAM OTBORA V AVIATSIIU)].

V. B. Malkin, N. M. Asiamolova, and A. K. Kochetov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 495-509. 24 refs. In Russian.

Analysis attempting a classification of the EEG of men ranging in age from 18 to 23 years, who had passed their pilot fitness tests. A study of the EEGs obtained from 900 individuals (partly periodically over a period from 1 to 3 years and partly at intervals of 3 to 4 hr over a period of 20 days) made it possible to discern five basic types of EEG. The respective EEGs are presented, and their characteristic features are outlined. V.P.

A68-38265 #
AUTOMATIC PROCESSING OF DATA CONCERNING THE HUMAN EXTERNAL RESPIRATION FUNCTION [AVTOMATICHESKAIA OBRABOTKA DANNYKH FUNKTSII VNESHNEGO DYKHANIIA CHELOVEKA].
A. M. Zhdanov and K. K. Shcherbakov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 6 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 6].
Edited by N. M. Sisakian.
Moscow, Izdatel'stvo Nauka, 1967, p. 509-520. In Russian.

Development of an automatic process for processing pneumotachometric data, which makes it possible to obtain numerical values for a complex of external respiration indices sufficient to control the condition of the respiration system and to perform highly specialized investigations. The proposed data-processing system incorporates a set of sensors, a device for studying the external respiration function, and a digital computer. V.P.

A68-38267
PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967. 552 p. In Russian.

CONTENTS:

FOREWORD [PREDISLOVIE], p. 3.

WORK ACTIVITY [RABOCHAIA DEIATEL'NOST'].

PROBLEMS OF HUMAN RELIABILITY IN SPACECRAFT CONTROL SYSTEMS [PROBLEMY NADEZHNOSTI CHELOVEKA V SISTEMAKH UPRAVLENIIA KOSMICHESKIM KORABLEM]. P. K. Isakov, V. A. Popov, and M. M. Sil'vestrov, p. 5-11. [See A68-38268 19-05]

SOME PROBLEMS CONCERNING THE ACTIVITY OF SENSORY SYSTEMS IN APPLICATION TO SPACE PHYSIOLOGY PROBLEMS [NEKOTORYE VOPROSY DEIATEL'NOSTI SENSORNYKH SISTEM PRIMENITEL'NO K ZADACHAM KOSMICHESKOI FIZIOLOGII]. V. D. Glezer, V. A. Kisliakov, V. A. Kozhevnikov, V. N. Chernigovskii, and L. A. Chistovich, p. 11-27. [See A68-38269 19-05]

PSYCHOPHYSIOLOGICAL CHARACTERISTICS OF THE SOLUTION OF MOTOR PROBLEMS BY MAN [PSIKHOFIZIOLOGICHESKIE KHARAKTERISTIKI RESHENIIA CHELOVEKOM DVIGATEL'NYKH ZADACH]. N. A. Rokotova, p. 27-61. 34 refs. [See A68-38270 19-04]

CERTAIN FEATURES OF PROGRAMING A SEQUENCE OF HUMAN ACTIONS [O NEKOTORYKH CHERTAKH PROGRAMMIROVANIIA POSLEDOVATEL'NOSTI DEISTVII CHELOVEKA]. N. A. Rokotova and I. M. Gorbunova, p. 61-74. 7 refs. [See A68-38271 19-04]

NEURAL CONTROL OF THE RATE OF HUMAN MOTIONS AND POSSIBLE MEANS OF REPRESENTING TIME IN THE NERVOUS SYSTEM [NERVNYI KONTROL' TEMPA DVIZHENII U CHELOVEKA I VOZMOZHNYE SPOSOBY PREDSTAVLENIIA VREMENI V NERVNOI SISTEME]. N. A. Rokotova, p. 75-86. 11 refs. [See A68-38272 19-04]

ORGANIZATION OF A SYSTEM OF ACTIONS IN THE CASE OF RANDOM ALTERNATION OF SIGNALS [ORGANIZATSIIA SISTEMY DEISTVII PRI SLUCHAINOM CHEREDOVANII SIGNALOV]. E. S. Rogovenko, p. 86-96. 11 refs. [See A68-38273 19-04]

ORGANIZATION OF A SYSTEM OF ACTIONS IN THE CASE OF RANDOM ALTERNATION OF SIGNALS AND SEARCH AND CHOICE OF ACTIONS [ORGANIZATSIIA SISTEMY DEISTVII PRI SLUCHAINOM CHEREDOVANII SIGNALOV, POISKE I VYBORE DEISTVII]. E. S. Rogovenko, p. 96-107. 5 refs. [See A68-38274 19-04]

RELATIVE SPEEDS AND VARIETY OF MOTIONS OF THE HUMAN FINGERS [SRAVNITEL'NYE SKOROSTI I VARIATIVNOST' DVIZHENII PAL'TSEV RUKI CHELOVEKA]. I. D. Bogina, p. 107-124. 8 refs. [See A68-38275 19-04]

EXECUTIVE ACTIVITY OF MAN WHEN FIXING PERFORMANCE TIME [ISPOLNITEL'NAIA DEIATEL'NOST' CHELOVEKA PRI FIKSATSII VREMENI VYPOLNENIIA]. I. M. Gorbunova and N. A. Rokotova, p. 124-145. 15 refs. [See A68-38276 19-04]

PECULIARITIES OF THE BIOMECHANICS OF ELEMENTARY HUMAN MOTIONS UNDER CONDITIONS OF WEIGHTLESSNESS AND IN THE PRESENCE OF ACCELERATIONS [OSOBENNOSTI BIOMEKHANIKI ELEMENTARNYKH DVIZHENII CHELOVEKA V USLOVIIAKH NEVESOMOSTI I PRI PEREGRUZKAKH]. L. V. Chkhaidze, I. A. Kolosov, V. I. Lebedev, I. F. Chekirda, A. V. Eremin, A. D. Burchuladze, and V. I. Stepantsov, p. 146-159. 7 refs. [See A68-38277 19-04]

CONDITION AND EFFICIENCY OF MAN DURING PROLONGED STAYS IN A SPACECRAFT MODEL [SOSTOIANIE I RABOTOSPOSOBNOST' CHELOVEKA V USLOVIIAKH DLITEL'NOGO PREBYVANIIA V MAKETE KOSMICHESKOGO KORABLIA]. S. G. Zharov, A. E. Baikov, I. I. Kas'ian, A. P. Kuz'minov, D. G. Maksimov, V. F. Onishchenko, and V. A. Popov, p. 159-169. 16 refs. [See A68-38278 19-04]

CONSERVATION OF A GIVEN STATIC EFFORT UNDER CONDITIONS OF GRAVITY TRANSFORMATION [SOKHRANENIE ZADANNOGO STATICHESKOGO USILIIA V USLOVIIAKH TRANSFORMATSII SILY TIAZHESTI]. M. A. Cherepakhin, p. 169-175. [See A68-38279 19-04]

PROBLEM OF OCULOGRAVITATIONAL ILLUSION [K VOPROSU OB OKULOGRAVICHESKOI ILLIUZII]. L. A. Kitaev-Smyk, p. 175-180. [See A68-38280 19-04]

OPTICAL ILLUSIONS OF PEOPLE EXPOSED TO WEIGHTLESSNESS AND TO THE COMBINED EFFECT OF WEIGHTLESSNESS AND ANGULAR AND CORIOLIS ACCELERATIONS [ZRITEL'NYE ILLIUZII U LIUDEI V NEVESOMOSTI I PRI KOMBINIROVANNOM DEISTVII NEVESOMOSTI, UGLOVYKH I KORIOLISOVYKH USKORENII]. L. A. Kitaev-Smyk, p. 180-188. [See A68-38281 19-04]

PROBLEMS OF THE HABITABILITY AND HYGIENE OF SPACECRAFT CABINS [VOPROSY OBITAEMOSTI I GIGIENY KABIN KOSMICHESKIKH KORABLEI].

PHYSIOLOGICAL-HYGIENIC EVALUATION OF THE LIFE PROTECTION SYSTEMS OF THE "VOSTOK" AND "VOSKHOD" SPACECRAFT [FIZIOLOGO-GIGIENICHESKAIA OTSENKA SISTEM ZHIZNENNOGO OBESPECHENIIA KOSMICHESKIKH KORABLEI "VOSTOK" I "VOSKHOD"]. G. I. Voronin, A. M. Genin, and A. G. Fomin, p. 189-200. [See A68-38282 19-05]

EFFECTS ON THE ORGANISM OF LONG-TERM CONFINEMENT (100 DAYS) IN AN ATMOSPHERE OF PURE OXYGEN AT AN OVERALL PRESSURE OF 198 MM Hg [VLIIANIE NA ORGANIZM DLITEL'NOGO PREBYVANIIA (100 SUTOK) V ATMOSFERE CHISTOGO KISLORODA PRI OBSHCHEM DAVLENII 198 MM PT. CT.] N. A. Agadzhanian, Iu. P. Bizin, G. P. Doronin, A. G. Kuznetsov, and A. R. Mansurov, p. 200-208. 12 refs. [See A68-38283 19-05]

CERTAIN FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF ANIMALS IN HYPEROXIC HELIUM MEDIA [NEKOTORYE FUNKTSII TSENTRAL'NOI NERVNOI SISTEMY I GAZOOBMEN PRI DLITEL'NOM PREBYVANII ZHIVOTNYKH V GIPEROKSICHESKOI GELIEVOI SREDE]. A. G. Zhironkin and G. V. Troshikhin, p. 208-212. 11 refs. [See A68-38284 19-04]

HUMAN RESPONSE TO HYPOXIA AND HYPERCAPNIA WHEN BREATHING NITROGEN-OXYGEN AND HELIUM-OXYGEN MIXTURES [REAKTSII CHELOVEKA NA GIPOKSIIU I GIPERKAPNIIU PRI DYKHANII AZOTNO- I GELIOKISLORODNYMI SMESIAMI]. I. S. Breslav and E. N. Salatsinskaia, p. 212-220. 9 refs. [See A68-38285 19-04]

PHYSIOLOGICAL EFFECT OF THE SUBSTITUTION OF HELIUM FOR ATMOSPHERIC NITROGEN UNDER CONDITIONS OF OXYGEN DEFICIENCY AND HIGH CARBON DIOXIDE CONCENTRATIONS [FIZIOLOGICHESKII EFFEKT ZAMENY AZOTA VOZDUKHA GELIEM V USLOVIIAKH NEDOSTATKA KISLORODA I POVYSHENNYKH KONTSENTRATSII UGLEKISLOGO GAZA].

A. G. Dianov, p. 220-232. 16 refs. [See A68-38286 19-04]

CERTAIN PECULIARITIES OF THE VOCAL FUNCTION UNDER CONDITIONS OF A MODIFIED GAS MEDIUM [NEKOTORYE OSOBENNOSTI RECHEVOI FUNKTSII V USLOVIIAKH IZMENENNOI GAZOVOI SREDY]. V. S. Kuznetsov, p. 232-237. 9 refs. [See A68-38287 19-04]

OXYGEN BREATHING AT HIGH PRESSURES, ITS PECULIARITIES, *TRAINING TO SUSTAIN IT, AND PHYSIOLOGICAL BASIS* [DYKHANIE KISLORODOM POD POVYSHENNYM DAVLENIEM, EGO OSOBENNOSTI, TRENIROVKA K NEMU I FIZIOLOGICHESKOE OBOSNOVANIE]. V. A. Skrypin, p. 237-247. 12 refs. [See A68-38288 19-04]

INFLUENCE OF PHYSICAL TRAINING CONDUCTED AT NORMAL AND LOW PARTIAL PRESSURES OF OXYGEN ON THE RESISTANCE OF WHITE MICE TO TRANSVERSE ACCELERATIONS AND HYPOXIA [VLIIANIE FIZICHESKOI TRENIROVKI, PROVEDENNOI PRI NORMAL'NOM I PONIZHENNOM PARTSIAL'NOM DAVLENII KISLORODA, NA USTOICHIVOST' BELYKH MYSHEI K POPERECHNO NAPRAVLENNYM PEREGRUZKAM I GIPOKSII]. P. V. Vasil'ev and N. N. Uglova, p. 248-255. 22 refs. [See A68-38289 19-04]

INFLUENCE OF DIFFERENT RATES OF HYPOXIA INCREASE ON THE VEGETATIVE FUNCTIONS AND THE BIOELECTRIC ACTIVITY OF THE BRAIN OF A DEVELOPING ORGANISM [VLIIANIE RAZLICHNOI SKOROSTI NARASTANIIA GIPOKSII NA VEGETATIVNYE FUNKTSII I BIOELEKTRICHESKUIU AKTIVNOST' MOZGA *RAZVIVAIUSHCHEGOSIA ORGANIZMA*]. *I. G. Dallakian* and G. M. Nikitina, p. 256-268. 15 refs. [See A68-38290 19-04]

INFLUENCE OF A PROLONGED STAY UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND RELATIVE ISOLATION ON MAN [VLIIANIE NA CHELOVEKA DLITEL'NOGO PREBYVANIIA V USLOVIIAKH PONIZHENNOGO BAROMETRICHESKOGO DAVLENIIA I OTNOSITEL'NOI IZOLIATSII]. D. I. Ivanov, V. B. Malkin, I. N. Cherniakov, V. L. Popkov, E. O. Popova, A. B. Flekkel', G. A. Arutiunov, V. G. Terent'ev, P. V. Buianov, N. A. Vorob'ev, and G. G. Sturua, p. 269-280. 8 refs. [See A68-38291 19-04]

INFLUENCE OF ADAPTATION TO HIGH-MOUNTAIN CONDITIONS ON THE RESISTANCE OF MAN TO ACUTE HYPOXIA AND HIGH TEMPERATURES [VLIIANIE ADAPTATSII K VYSOKOGOR'IU NA USTOICHIVOST' CHELOVEKA K OSTROI GIPOKSII V VYSOKOI TEMPERATURE]. V. B. Malkin and G. D. Iukhnovskii, p. 280-288. 6 refs. [See A68-38292 19-04]

ADAPTATION TO HYPOXIA AS A MEANS OF INCREASING THE RESISTANCE OF MAN TO THE EFFECT OF TRANSVERSE ACCELERATIONS [ADAPTATSIIA K GIPOKSII KAK SPOSOB POVY*SHENIIA USTOICHIVOSTI CHELOVEKA K VOZDEISTVIIU* POPERECHNYKH PEREGRUZOK]. A. R. Kotovskaia, P. V. Vasil'ev, R. A. Vartbaronov, and S. F. Simpura, p. 288-293. 17 refs. [See A68-38293 19-04]

FURTHER INVESTIGATIONS OF CHANGES IN THE OSMOTIC RESISTIVITY OF ERYTHROCYTES DURING HIGH-MOUNTAIN ACCLIMATIZATION [PRODOLZHENIE ISSLEDOVANII IZMENENIIA OSMOTICHESKOI REZISTENTNOSTI ERITROTSITOV PRI AKKLIMATIZATSII K VYSOKOGOR'IU]. Z. I. Barbashova, p. 293-298. [See A68-38294 19-04]

INFLUENCE OF HYPEROXIA ON THE DYNAMICS OF ANIMAL ERYTHROPOIESIS [O VLIIANII GIPEROKSII NA DINAMIKU ERITROPOEZA ZHIVOTNYKH]. A. M. Shmeleva and I. S. Breslav, p. 298-304. 14 refs. [See A68-38295 19-04]

MEANS OF REDUCING THE TOXIC EFFECT OF CARBONIC ACID ON THE ORGANISM [VOZMOZHNOSTI SNIZHENIIA TOKSICHESKOGO DEISTVIIA UGLEKISLOTY NA ORGANIZM]. V. P. Zagriadskii, O. Iu. Sidorov, and E. K. Sulimo-Samuillo, p. 305-310. 10 refs. [See A68-38296 19-04]

PROBLEMS ASSOCIATED WITH TRAINING THE HUMAN ORGANISM TO SUSTAIN TEMPERATURE EFFECTS WITH THE AID OF INCREASING THE TEMPERATURE RESISTANCE [NEKOTORYE VOPROSY TRENIROVKI ORGANIZMA CHELOVEKA K TEMPERATURNYM VOZDEISTVIIAM V TSELIAKH POVYSHENIIA TEPLOVOI USTOICHIVOSTI]. P. V. Buianov, A. V. Beregovkin, and M. A. Migulina, p. 310-319. 16 refs. [See A68-38297 19-04]

PROBLEM OF NORMALIZING NOISE IN SPACECRAFT CABINS DURING PROLONGED FLIGHTS [K PROBLEME NORMIROVANIIA SHUMOV V KABINAKH KOSMICHESKIKH KORABLEI PRI DLITEL'NYKH POLETAKH]. E. M. Iuganov, Iu. V. Krylov, and V. S. Kuznetsov, p. 319-327. 20 refs. [See A68-38298 19-05]

CONDITION OF THE ACOUSTIC ANALYZER FUNCTION DURING A PROLONGED EXPOSURE OF MAN TO AN ARTIFICIAL ATMOSPHERE [SOSTOIANIE FUNKTSII SLUKHOVOGO ANALIZATORA *PRI MNOGOSUTOCHNOM PREBYVANII CHELOVEKA* V USLOVIIAKH ISKUSSTVENNOI ATMOSFERY]. Iu. V. Krylov, p. 327-331. 10 refs. [See A68-38299 19-05]

BIOLOGICAL EFFECT OF WIDE-BAND INTENSIVE NOISE ON THE ANIMAL ORGANISM [BIOLOGICHESKOE DEISTVIE SHIROKOPOLOSNOGO INTENSIVNOGO SHUMA NA ORGANIZM ZHIVOTNYKH]. V. I. Ponomar'kov, A. Iu. Tysik, V. I. Kudriavtseva, A. S. Barer, V. K. Kostin, V. E. Leshchenko, R. M. Morozova, L. V. Nosokin, and A. N. Frolov, p. 331-334. 7 refs. [See A68-38300 19-04]

EFFECT OF NOISE ON THE FUNCTIONS OF THE ADRENAL CORTEX AND THYROID GLAND AND ON THE HIGHER NERVOUS ACTIVITY OF WHITE RATS [VLIIANIE ZVUKA NA FUNKTSIIU KORY NADPOCHECHNIKOV, SHCHITOVIDNOI ZHELEZY I *VYSSHUIU NERVNUIU DEIATEL'NOST' BELYKH KRYS*]. T. S. Barutkina, T. T. Zarubailo, M. I. Mitiushov, A. N. Panov, V. V. Pakitskaia, and E. V. Sokolova, p. 334-342. 18 refs. [See A68-38301 19-04]

INFLUENCE OF HYPODYNAMIA ON THE NITROGEN METABOLISM AND THE MEANING OF PROPORTIONED PHYSICAL LOADS FOR THE CONSERVATION OF NITROGEN EQUILIBRIUM [O VLIIANII GIPODINAMII NA AZOTISTYI OBMEN I ZNACHENII DOZIROVANNYKH FIZICHESKIKH NAGRUZOK DLIA SOKHRANENIIA AZOTISTOGO RAVNOVESIIA]. Iu. K. Syzrantsev, p. 342-347. 19 refs. [See A68-38302 19-04]

METABOLISM UNDER CONDITIONS OF LIMITED MOBILITY AND QUALITATIVELY DIFFERING DIETS [OBMEN VESHCHESTV V USLOVIIAKH ORGANICHENNOI PODVIZHNOSTI PRI KA*CHESTVENNO RAZLICHNOM PITANII*]. *Iu. F. Udalov*, R. V. Kudrova, M. I. Kuznetsov, P. P. Lobzin, V. A. Petrovykh, I. G. Popov, I. A. Romanova, Iu. K. Syzrantsev, A. M. Terpilovskii, L. N. Rogatina, and N. A. Chelnokova, p. 348-355. 6 refs. [See A68-38303 19-04]

INVESTIGATION OF SOME ASPECTS OF THE HUMAN NUTRITIONAL STATUS UNDER CONDITIONS OF A PROLONGED STAY IN THE HORIZONTAL POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS [ISSLEDOVANIE NEKOTORYKH STORON PISHCHEVOGO STATUSA CHELOVEKA V USLOVIIAKH DLITEL'NOGO PREBYVANIIA V GORIZONTAL'NOM POLOZHENII I POSLEDUIUSHCHEGO VOZDEISTVIIA PEREGRUZOK]. V. A. Petrovykh, R. V. Kudrova, M. I. Kuznetsov, P. P. Lobzin, I. G. Popov, I. A. Romanova, Iu. K. Syzrantsev, A. M. Terpilovskii, Iu. F. *Udalov*, and N. A. Chelnokova, p. 355-363. 6 refs. [See A68-38304 19-04]

EXPERIENCE IN THE USE OF A BIOMASS OF UNICELLULAR SEAWEEDS IN HUMAN FOOD RATIONS [OPYT ISPOL'ZOVANIIA BIOMASSY ODNOKLETOCHNYKH VODOROSLEI V PITANII CHELOVEKA]. *Iu. I. Kondrat'ev, V. P. Bychkov, A. S. Ushakov*, and E. Ia. Shepelev, p. 363-370. 15 refs. [See A68-38305 19-05]

MATHEMATICAL METHOD FOR CALCULATING THE AMOUNT OF PRODUCTS REQUIRED FOR A GIVEN FOOD RATION FROM A LIMITED ASSORTMENT OF PRODUCTS [MATEMATICHESKII METOD RASCHETA NEOBKHODIMOGO KOLICHESTVA *PRODUKTOV* DLIA ZADANNOGO RATSIONA PITANIIA IZ ORGANICHENNOGO ASSORTIMENTA PRODUKTOV]. M. F. Fomin, p. 370-382. [See A68-38306 19-05]

HETEROTROPHIC ORGANISMS AS A HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS [GETEROTROFNYE ORGANIZMY-ODIN IZ ISTOCHNIKOV PITANIIA CHELOVEKA V DLITEL'NYKH KOSMICHESKIKH POLETAKH]. V. I. Iazdovskii and G. S. Ratner, p. 382-388. 13 refs. [See A68-38307 19-05]

WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS [VODOOBESPECHENIE CHLENOV EKIPAZHA, KOSMICHESKOM POLETE]. A. A. Moiseev, Iu. S. Koloskova, Iu. E. Siniak, and S. V. Chizhov, p. 389-400. 23 refs. [See A68-38308 19-05]

POSSIBILITIES OF UTILIZING WATER CONDENSED FROM A MANNED-CABIN ATMOSPHERE FOR DRINKING AND OTHER NUTRITION PURPOSES [O VOZMOZHNOSTI ISPOL'ZOVANIIA VODY, SKONDENSIROVANNOI IZ ATMOSFERY OBITAEMOI KABINY DLIA PIT'IA I DRUGIKH PISHCHEVYKH TSELEI]. V. S. Khalturin, E. Ia. Shepelev, V. A. Kriuchkov, and N. A. Gaidamakin, p. 400-408. 5 refs. [See A68-38309 19-05]

METHODS AND MEANS OF MAXIMUM SUPPRESSION OF MICROFLORA IN SMALL COMPARTMENTS DESIGNED FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS [METODY I SREDSTVA MAKSIMAL'NOGO SNIZHENIIA MIKROFLORY V POMESHCHENIIAKH MALOGO OB'EMA, PREDNAZNACHENNYKH DLIA PROVEDENIIA DLITEL'NYKH EKSPERIMENTOV S ISPYTATELIAMI]. V. I. Vashkov, E. N. Nikiforova, N. V. Ramkova, and R. V. Adamov, p. 408-412. [See A68-38310 19-05]

INVESTIGATION OF THE CONDITION OF HUMAN SKIN UNDER PROLONGED INADEQUATE SKIN CARE [ISSLEDOVANIIA SOSTOIANIIA KOZHI CHELOVEKA V USLOVIIAKH DLITEL'NOGO OGRANICHENIIA EE GIGIENICHESKOI OBRABOTKI]. I. G. Popov, V. V. Borshchenko, F. K. Savinich, M. I. Kozar', and A. M. Finogenov, p. 413-420. [See A68-38311 19-05]

BASIC PERSONAL HYGIENE REQUIREMENTS FOR ASTRONAUTS [OSNOVNYE TREBOVANIIA K SREDSTVAM LICHNOI GIGIENY KOSMONAVTOV]. V. V. Levashov and A. M. Finogenov, p. 420-424. [See A68-38312 19-05]

OBJECTIVE EVALUATION OF THE DEODORIZING AND REFRESHING EFFECT OF CERTAIN PREPARATIONS FOR THE HYGIENE OF THE ORAL CAVITY UNDER SPECIFIC CONDITIONS [OB'EKTIVNAIA OTSENKA DEZODORIRUIUSHCHEGO I OSVEZHAIUSHCHEGO DEISTVIIA NEKOTORYKH SREDSTV DLIA GIGIENY POLOSTI RTA V SPETSIFICHESKIKH USLOVIIAKH]. Iu. A. Fedorov, p. 424-427. 7 refs. [See A68-38313 19-05]

GASEOUS TOXIC SUBSTANCES PRODUCED BY STORED HUMAN FECES [TOKSICHESKIE GAZOOBRAZNYE VESHCHESTVA, VYDELIAEMYE PRI KHRANENII CHELOVECHESKIKH FEKALII]. V. V. Kustov, V. I. Mikhailov, L. T. Poddubnaia, and L. N. Pogatina, p. 428-432. 7 refs. [See A68-38314 19-05]

GASEOUS TOXIC SUBSTANCES PRODUCED BY STORED URINE [TOKSICHESKIE GAZOOBRAZNYE VESHCHESTVA, VYDELIAIUSHCHIESIA PRI KHRANENII MOCHI]. V. V. Kustov, V. I. Mikhailov, and L. T. Poddubnaia, p. 432-435. 6 refs. [See A68-38315 19-05]

SEARCH FOR CHEMICAL PREPARATIONS FOR THE PRESERVATION OF FECES UNDER CONDITIONS OF SPACE FLIGHT [IZYSKANIE PREPARATOV DLIA KONSERVATSII FEKALII PRIMENITEL'NO K USLOVIIAM KOSMICHESKOGO POLETA]. L. N. Rogatina, p. 435-438. [See A68-38316 19-05]

MEDICAL CARE DURING LONG SPACE FLIGHTS [K VOPROSU MEDITSINSKOGO OBESPECHENIIA DLITEL'NYKH KOSMICHESKIKH POLETOV]. G. L. Iaroshenko, V. G. Terent'ev, and V. A. Chichkin, p. 439-442. [See A68-38317 19-05]

CERTAIN PHYSIOLOGICAL ASPECTS OF THE APPLICATION OF HYPOTHERMIA IN SPACE MEDICINE [NEKOTORYE FIZIOLOGICHESKIE ASPEKTY ISPOL'ZOVANIIA GIPOTERMII V KOSMICHESKOI MEDITSINE]. P. V. Vasil'ev and G. D. Glod, p. 443-450. 47 refs. [See A68-38318 19-04]

BIOTECHNOLOGY [BIOTEKHNOLOGIIA].

CERTAIN RESULTS OF A PHYSIOLOGICAL AND ECOLOGICAI STUDY OF A CHLORELLA CULTURE AS A COMPONENT OF A CLOSED ECOLOGICAL SYSTEM [NEKOTORYE ITOGI FIZIOLOGO-EKOLOGICHESKOGO ISSLEDOVANIIA KUL'TURY KHLORELLY KAK ZVENA ZAKRYTOI EKOLOGICHESKOI SISTEMY]. E. Ia. Shepelev and G. I. Meleshko, p. 451-460. 24 refs. [See A68-38319 19-05]

BIOTECHNOLOGICAL AUTOMATIC CONTROL SYSTEM FOR THE PROCESS OF PHOTOSYNTHESIS [BIOTEKHNICHESKAIA SISTEMA SAMOREGULIROVANIIA PROTSESSOM FOTOSINTEZA]. M. A. Khvedelidze, S. I. Dumbadze, V. G. Apridonidze, I. S. Zaalishvili, T. L. Khomeriki, Kh. G. Gagua, M. Sh. Lomsadze, and B. T. Zhorzholiani, p. 460-469. 17 refs. [See A68-38320 19-05]

STUDY OF PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH [IZUCHENIE FOTOSINTEZA KHLORELLY PRI NEIZMENNYKH USLOVIIAKH ROSTA]. I. V. Aleksandrova and E. A. Ivanov, p. 470-474. [See A68-38321 19-05]

EFFECT OF CERTAIN GASEOUS IMPURITIES IN AN INHABITED ATMOSPHERE ON THE PHOTOSYNTHETIC ACTIVITY OF CHLORELLA [O VLIIANII NEKOTORYKH GAZOOBRAZNYKH PRIMESEI OBITAEMOI ATMOSFERY NA FOTOSINTETICHESKUIU DEIATEL'NOST' KHLORELLY]. M. M. Korotaev, V. V. Kustov, G. I. Meleshkov, V. I. Mikhailov, and E. Ia. Shepelev, p. 475-480 5 refs. [See A68-38322 19-05]

CERTAIN GROWTH AND GAS EXCHANGE CHARACTERISTICS OF THE ALGA ANACYSTIS NIDULANS IN AN INTENSIVE CULTURE [NEKOTORYE KHARAKTERISTIKI ROSTA I GAZOOBMENA VODOROSLI ANACYSTIS NIDULANS V INTENSIVNOI KUL'TURE]. T. B. Galkina, I. I. Kashkovskii, O. A. Kurapova, E. K. Lebedeva, G. I. Meleshko, and Iu. N. Ul'ianin, p. 480-486. 12 refs. [See A68-38323 19-05]

SELECTION OF THE ANIMAL COMPONENTS OF CLOSED ECOLOGICAL SYSTEMS [K VOPROSU O PODBORE ZHIVOTNYKH KOMPONENTOV ZAMKNUTYKH EKOLOGICHESKIKH SISTEM]. N. V. Mironova, p. 486-497. 14 refs. [See A68-38324 19-05]

GROWTH OF TILAPIA (TILAPIA MOSSAMBICA PETERS) IN RELATION TO FOOD [ROST TILIAPII (TILAPIA MOSSAMBICA PETERS) V ZAVISIMOSTI OT PITANIIA]. N. V. Mironova and T. A. Skvortsova, p. 498-505. [See A68-38325 19-05]

COMPARATIVE EVALUATION OF THE GROWTH OF TILAPIA (TILAPIA MOSSAMBICA PETERS) FED WITH CHLORELLA AND OTHER FODDER [SRAVNITEL'NAIA OTSENKA ROSTA TILIAPII (TILAPIA MOSSAMBICA PETERS) PRI PITANII IKH KHLORELLOI I DRUGIMI KORMAMI]. N. V. Mironov, p. 505-512. [See A68-38326 19-05]

EFFECT OF VIBRATIONAL AND LINEAR ACCELERATIONS ON FISH [VLIIANIE NA RYB VIBRATSIONNYKH I LINEINYKH PEREGRUZOK]. V. Ia. Mamontov and G. B. Mel'nikov, p. 512-521. [See A68-38327 19-05]

EFFECT OF GAMMA RAYS AND PROTONS ON CHLORELLA [DEISTVIE γ-LUCHEI I PROTONOV NA KHLORELLU]. I. D. Anikeeva, E. N. Baulina, and V. A. Shevchenko, p. 521-524. 7 refs. [See A68-38328 19-05]

STUDY OF THE AIR AND WATER REGENERATION BY HIGHER PLANTS IN A CLOSED VOLUME [IZUCHENIE REGENERATSII VOZDUKHA I VODY VYSSHIMI RASTENIIAMI V ZAMKNUTOM OB'EME]. N. T. Nilovskaia and M. M. Bokovaia, p. 524-534. 14 refs. [See A68-38329 19-05]

A68-38268 #
PROBLEMS OF HUMAN RELIABILITY IN SPACECRAFT CONTROL SYSTEMS [PROBLEMY NADEZHNOSTI CHELOVEKA V SISTEMAKH UPRAVLENIIA KOSMICHESKIM KORABLEM].
P. K. Isakov, V. A. Popov, and M. M. Sil'vestrov.
(International Symposium on Basic Problems of Man in Space, 2nd, Paris, France, June 14-18, 1965, Preprint no. 14.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 5-11. In Russian.
[For abstract see issue 19, page 2748, Accession no. A65-29944]

A68-38269 #
SOME PROBLEMS CONCERNING THE ACTIVITY OF SENSORY SYSTEMS IN APPLICATION TO SPACE PHYSIOLOGY PROBLEMS [NEKOTORYE VOPROSY DEIATEL'NOSTI SENSORNYKH SISTEM PRIMENITEL'NO K ZADACHAM KOSMICHESKOI FIZIOLOGII].
V. D. Glezer, V. A. Kisliakov, V. A. Kozhevnikov, V. N. Chernigovskii, and L. A. Chistovich.
(International Symposium on Basic Environmental Problems of Man in Space, 2nd, Paris, France, June 14-18, 1965, Preprint no. 18.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 11-27. In Russian.
[For abstract see issue 20, page 2915, Accession no. A65-31239]

A68-38270 #
PSYCHOPHYSIOLOGICAL CHARACTERISTICS OF THE SOLUTION OF MOTOR PROBLEMS BY MAN [PSIKHOFIZIOLOGICHESKIE KHARAKTERISTIKI RESHENIIA CHELOVEKOM DVIGATEL'NYKH ZADACH].
N. A. Rokotova.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 27-61. 34 refs. In Russian.

Review of experiments and associated hypotheses concerning methods of organizing the motor activity of man. It is shown that the formation of an executing program is based on a process involving an evaluation of the sequence of actions performed, the separation of the entire set of responses into certain subsets, and the combination of the individual responses into groups capable of describing them as a whole. Some aspects of the rhythm and uniformity of performing a sequence of actions are examined. V. P.

A68-38271 #
CERTAIN FEATURES OF PROGRAMING A SEQUENCE OF HUMAN ACTIONS [O NEKOTORYKH CHERTAKH PROGRAMMIROVANIIA POSLEDOVATEL'NOSTI DEISTVII CHELOVEKA].
N. A. Rokotova and I. M. Gorbunova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 61-74. 7 refs. In Russian.

Experimental investigation aimed at determining the extent to which the dimensionality of a group defines the structure of a sequence of actions. To this end, an experimental program is developed for studying two ordered sequences of actions, having like sets of motive acts and the same number of elements (length of sequence) but differing in the dimensionality of the group. The extent to which a feature of the problem is specific and invariant is determined by comparing the rate of performance, the error distribution, and the time "pattern" of the execution of two sequences for a group of test subjects. V. P.

A68-38272 #
NEURAL CONTROL OF THE RATE OF HUMAN MOTIONS AND POSSIBLE MEANS OF REPRESENTING TIME IN THE NERVOUS SYSTEM [NERVNYI KONTROL' TEMPA DVIZHENII U CHELOVEKA I VOZMOZHNYE SPOSOBY PREDSTAVLENIIA VREMENI V NERVNOI SISTEME].
N. A. Rokotova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 75-86. 11 refs. In Russian.

Experimental investigation showing that the nervous system of adults incorporates a description of a certain set of time intervals and that the automatic control of the rate of motions (which can be used for measuring the duration of external signals) is realized according to this set of intervals. It is also shown that the accuracy of performing an organized sequence of motions, involving a repeated reproduction of a certain interval of the total performance time, substantially exceeds the accuracy of differentiating or reproducing time intervals which lie beyond these limits. V. P.

A68-38273 #
ORGANIZATION OF A SYSTEM OF ACTIONS IN THE CASE OF RANDOM ALTERNATION OF SIGNALS [ORGANIZATSIIA SISTEMY DEISTVII PRI SLUCHAINOM CHEREDOVANII SIGNALOV].
E. S. Rogovenko.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 86-96. 11 refs. In Russian.

Experimental investigation aimed at determining the manner in which a human individual organizes his activity, when making a decision concerning his next action involves an estimation of the preceding actions with simultaneous consideration of an instantaneous signal. Means of organizing a system of actions and obtaining rules for use in the solution of problems are examined. V. P.

A68-38274 #
ORGANIZATION OF A SYSTEM OF ACTIONS IN THE CASE OF RANDOM ALTERNATION OF SIGNALS AND SEARCH AND CHOICE OF ACTIONS [ORGANIZATSIIA SISTEMY DEISTVII PRI SLUCHAINOM CHEREDOVANII SIGNALOV, POISKE I VYBORE DEISTVII].
E. S. Rogovenko.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 96-107. 5 refs. In Russian.

Experimental investigation of the manner in which a human individual organizes a system of actions when he himself is allowed to select the transitions between the individual actions. The problem of determining whether, under such conditions, an individual is capable of reducing the number of his actions is also studied. V. P.

A68-38275 #
RELATIVE SPEEDS AND VARIETY OF MOTIONS OF THE HUMAN FINGERS [SRAVNITEL'NYE SKOROSTI I VARIATIVNOST' DVIZHENII PAL'TSEV RUKI CHELOVEKA].
I. D. Bogina.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 107-124. 8 refs. In Russian.

Experimental investigation of the time characteristics of the motions of each finger of the left and right hand when the test subjects were allowed to choose the rates of motion. Each finger was required to operate 100 times a teletype key designed for it, for each of the speeds employed. The results support the findings of Spivack and Levine (1964), according to which the time intervals required to perform a motion are governed by the central nervous system. V. P.

A68-38276 #
EXECUTIVE ACTIVITY OF MAN WHEN FIXING PERFORMANCE TIME [ISPOLNITEL'NAIA DEIATEL'NOST' CHELOVEKA PRI FIKSATSII VREMENI VYPOLNENIIA].
I. M. Gorbunova and N. A. Rokotova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 124-145. 15 refs. In Russian.

Experimental investigation aimed at obtaining data concerning the control of the time characteristics of human motions. The data obtained are used in a discussion of the following two problems: (1) the possible interpretations of the error compensation for a given time interval, and (2) information that can be deduced from the quantitative characteristics of the compensation. V. P.

A68-38277 #
PECULIARITIES OF THE BIOMECHANICS OF ELEMENTARY HUMAN MOTIONS UNDER CONDITIONS OF WEIGHTLESSNESS AND IN THE PRESENCE OF ACCELERATIONS [OSOBENNOSTI BIOMEKHANIKI ELEMENTARNYKH DVIZHENII CHELOVEKA V USLOVIIAKH NEVESOMOSTI I PRI PEREGRUZKAKH].
L. V. Chkhaidze, I. A. Kolosov, V. I. Lebedev, I. F. Chekirda, A. V. Eremin, A. D. Burchuladze, and V. I. Stepantsov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 146-159. 7 refs. In Russian.

Investigation of the changes occurring in the coordination structure of elementary (customary) human motions when the gravitational field changes from 0 to 2 g. The experiments were performed by Bernstein's (1935) "cyclogrammetric" method. Characteristic features of the performance of such motions when the subjects were exposed to positive accelerations ranging from 1.8 to 2.2 units are also studied. V. P.

A68-38278 #
CONDITION AND EFFICIENCY OF MAN DURING PROLONGED STAYS IN A SPACECRAFT MODEL [SOSTOIANIE I RABOTOSPOSOBNOST' CHELOVEKA V USLOVIIAKH DLITEL'NOGO PREBYVANIIA V MAKETE KOSMICHESKOGO KORABLIA].

S. G. Zharov, A. E. Baikov, I. I. Kas'ian, A. P. Kuz'minov, D. G. Maksimov, V. F. Onishchenko, and V. A. Popov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 159-169. 16 refs. In Russian.

Investigation of the physical condition and efficiency of human subjects confined for 12 days in a cabin hermetically and acoustically sealed off from the ambient medium. The test subjects wore space suits, remaining in a reclined position in an armchair without using any means to counteract the effects of hypodynamia. The cabin temperature ranged from 18 to 21°C, the air humidity ranged from 45 to 65%, and the oxygen content ranged from 18 to 20%. The CO_2 content was less than 1%. Nutrition consisted of a version of a space ration. Pronounced functional shifts observed during clinical and other tests at the end of the experiment indicate a need for further studies and for the development of optimum work and rest conditions for astronauts. V.P.

A68-38279 #
CONSERVATION OF A GIVEN STATIC EFFORT UNDER CONDITIONS OF GRAVITY TRANSFORMATION [SOKHRANENIE ZADANNOGO STATICHESKOGO USILIIA V USLOVIIAKH TRANSFORMATSII SILY TIAZHESTI].
M. A. Cherepakhin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 169-175. In Russian.

Investigation of certain coordination indices of man under changing gravity conditions created by flying four to eight weightlessness parabolas. It was found that the test subjects had no trouble in operating a voltage-control lever (maintaining a constant voltage) when using visual control. When the subjects were blindfolded, the accuracy of the effort depended on the changes in the subjects' weight. In the presence of accelerations, the tendency was to increase the pressure on the lever. V.P.

A68-38280 #
PROBLEM OF OCULOGRAVITATIONAL ILLUSION [K VOPROSU OB OKULOGRAVICHESKOI ILLIUZII].
L. A. Kitaev-Smyk.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 175-180. In Russian.

Experimental investigation showing that the optical illusions associated with weightlessness may be attributed to the influence of inverse afferentation which signals changes in the oculomotor apparatus that compensate for the tonic effect of gravireceptors on this apparatus. It is shown that people subject to psychic reactions are particularly susceptible to such illusions. V.P.

A68-38281 #
OPTICAL ILLUSIONS OF PEOPLE EXPOSED TO WEIGHTLESSNESS AND TO THE COMBINED EFFECT OF WEIGHTLESSNESS AND ANGULAR AND CORIOLIS ACCELERATIONS [ZRITEL'NYE ILLIUZII U LIUDEI V NEVESOMOSTI I PRI KOMBINIROVANNOM DEISTVII NEVESOMOSTI, UGLOVYKH I KORIOLISOVYKH USKORENII].
L. A. Kitaev-Smyk.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 180-188. In Russian.

Discussion of experiments in which test subjects were required to perceive plane figures under weightlessness conditions and under conditions where weightlessness was combined with the effect of angular and Coriolis accelerations. It is found that optical illusions observed during the initial phase of weightlessness are of a gravireceptor (primarily labyrinth) origin, and that they develop against a background of central effects which control the influx of gravireceptor afferentation and coordinate this afferentation with the visual analyzor system. V.P.

A68-38282 #
PHYSIOLOGICAL-HYGIENIC EVALUATION OF THE LIFE PROTECTION SYSTEMS OF THE "VOSTOK" AND "VOSKHOD" SPACECRAFT [FIZIOLOGO-GIGIENICHESKAIA OTSENKA SISTEM ZHIZNENNOGO OBESPECHENIIA KOSMICHESKIKH KORABLEI "VOSTOK" I "VOSKHOD"].
G. I. Voronin, A. M. Genin, and A. G. Fomin.
(International Symposium on Basic Problems of Man in Space, 2nd, Paris, France, June 14-18, 1965, Preprint no. 16.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 189-200. In Russian.
[For abstract see issue 19, page 2754, Accession no. A65-29942]

A68-38283 #
EFFECTS ON THE ORGANISM OF LONG-TERM CONFINEMENT (100 DAYS) IN AN ATMOSPHERE OF PURE OXYGEN AT AN OVERALL PRESSURE OF 198 MM Hg [VLIIANIE NA ORGANIZM DLITEL'NOGO PREBYVANIIA (100 SUTOK) V ATMOSFERE CHISTOGO KISLORODA PRI OBSHCHEM DAVLENII 198 MM PT. CT.].
N. A. Agadzhanian, Iu. P. Bizin, G. P. Doronin, A. G. Kuznetsov, and A. R. Mansurov.
(International Symposium on Basic Environmental Problems of Man in Space, 2nd, Paris, France, June 14-18, 1965, Preprint no. 13.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 200-208. 12 refs. In Russian.
[For abstract see issue 19, page 2749, Accession no. A65-29947]

A68-38284 #
CERTAIN FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF ANIMALS IN HYPEROXIC HELIUM MEDIA [NEKOTORYE FUNKTSII TSENTRAL'NOI NERVNOI SISTEMY I GAZOOBMEN PRI DLITEL'NOM PREBYVANII ZHIVOTNYKH V GIPEROKSICHESKOI GELIEVOI SREDE].
A. G. Zhironkin and G. V. Troshikhin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 208-212. 11 refs. In Russian.

Experimental investigation aimed at studying certain physiological indices of the central nervous system and the gas exchange of mice exposed to helium-oxygen and nitrogen-oxygen atmospheres containing up to 60% O_2. The dynamics of the generation of a conditioned reflex and the rate of the motor reaction, as well as the dynamics of O_2 consumption, are given in graphical form. V.P.

A68-38285 #
HUMAN RESPONSE TO HYPOXIA AND HYPERCAPNIA WHEN BREATHING NITROGEN-OXYGEN AND HELIUM-OXYGEN MIXTURES [REAKTSII CHELOVEKA NA GIPOKSIIU I GIPERKAPNIIU PRI DYKHANII AZOTNO- I GELIOKISLORODNYMI SMESIAMI].
I. S. Breslav and E. N. Salatsinskaia.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 212-220. 9 refs. In Russian.

Investigation of the effect of helium on the reaction of the human respiratory system to an oxygen deficiency and an excess of carbon dioxide in the gas mixture inhaled. The test subjects were men and women between the ages of 18 and 25. The results indicate that the CO_2 partial pressure of the blood is the principal breathing regulator, which enables human beings to differentiate between the CO_2 contents of gas mixtures and reject those with high contents (of the order of 6% CO_2). The CO_2 partial pressure is also likely to play an important part in the ability of man to reject hypoxic mixtures. V.P.

A68-38286 #
PHYSIOLOGICAL EFFECT OF THE SUBSTITUTION OF HELIUM FOR ATMOSPHERIC NITROGEN UNDER CONDITIONS OF OXYGEN

DEFICIENCY AND HIGH CARBON DIOXIDE CONCENTRATIONS [FIZIOLOGICHESKII EFFEKT ZAMENY AZOTA VOZDUKHA GELIEM V USLOVIIAKH NEDOSTATKA KISLORODA I POVYSHENNYKH KONTSENTRATSII UGLEKISLOGO GAZA].
A. G. Dianov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 220-232. 16 refs. In Russian.

Discussion of an investigation performed with rats in a hermetically sealed helium-oxygen chamber at temperatures of 22, 27, 31, and 36°C. The results of body-temperature, systole, and respiration-rate measurements are diagramed. A substantial decrease in body-temperature was observed at 22°C. This rate of decrease was much higher than in the case of a normal atmosphere. At 27°, the body-temperature decreased immediately after the chamber was hermetically sealed, and was 3° lower when breathing ceased than in a normal atmosphere. The increase in body-temperature at 36° was approximately equal to that in a normal atmosphere, the body-temperature increasing uniformly until the animals perished. V. P.

A68-38287 #
CERTAIN PECULIARITIES OF THE VOCAL FUNCTION UNDER CONDITIONS OF A MODIFIED GAS MEDIUM [NEKOTORYE OSOBENNOSTI RECHEVOI FUNKTSII V USLOVIIAKH IZMENENNOI GAZOVOI SREDY].
V. S. Kuznetsov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 232-237. 9 refs. In Russian.

Investigation of the vocal frequency and vocal amplitude of test subjects made to breathe a helium-oxygen mixture. The results indicate that the use of helium-oxygen as a spacecraft atmosphere can lead to a substantial deterioration of the quality of communications in the presence of noise, both in transmission and reception. The use of speech-correcting techniques will be necessary. V. P.

A68-38288 #
OXYGEN BREATHING AT HIGH PRESSURES, ITS PECULIARITIES, TRAINING TO SUSTAIN IT, AND PHYSIOLOGICAL BASIS [DYKHANIE KISLORODOM POD POVYSHENNYM DAVLENIEM, EGO OSOBENNOSTI, TRENIROVKA K NEMU I FIZIOLOGICHESKOE OBOSNOVANIE].
V. A. Skrypin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 237-247. 12 refs. In Russian.

Discussion, from the standpoint of aviation and space medicine, of the physiological premises that are important for the development of rational oxygen-breathing techniques at high pressures for flying personnel and astronauts. Techniques are described which enable an individual to master new methods of breathing (and the use of novel aircraft oxygen equipment) which will substantially increase his chances of surviving an emergency descent from high altitudes. V. P.

A68-38289 #
INFLUENCE OF PHYSICAL TRAINING CONDUCTED AT NORMAL AND LOW PARTIAL PRESSURES OF OXYGEN ON THE RESISTANCE OF WHITE MICE TO TRANSVERSE ACCELERATIONS AND HYPOXIA [VLIIANIE FIZICHESKOI TRENIROVKI, PROVEDENNOI PRI NORMAL'NOM I PONIZHENNOM PARTSIAL'NOM DAVLENII KISLORODA, NA USTOICHIVOST' BELYKH MYSHEI K POPERECHNO NAPRAVLENNYM PEREGRUZKAM I GIPOKSII].
P. V. Vasil'ev and N. N. Uglova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 248-255. 22 refs. In Russian.

Investigation of the influence of physical training in combination with hypoxia on the general resistance of animals to transverse accelerations and gradually developing hypoxia. The results of the experiments, and their comparison with clinicophysiological reactions to the effects of hypoxia and weightlessness indicate that physical training under conditions of gradually developing hypoxia may be an effective means of sustaining astronauts' high resistance to the ill effects of prolonged missions. V. P.

A68-38290 #
INFLUENCE OF DIFFERENT RATES OF HYPOXIA INCREASE ON THE VEGETATIVE FUNCTIONS AND THE BIOELECTRIC ACTIVITY OF THE BRAIN OF A DEVELOPING ORGANISM [VLIIANIE RAZLICHNOI SKOROSTI NARASTANIIA GIPOKSII NA VEGETATIVNYE FUNKTSII I BIOELEKTRICHESKUIU AKTIVNOST' MOZGA RAZVIVAIUSHCHEGOSIA ORGANIZMA].
I. G. Dallakian and G. M. Nikitina.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 256-268. 15 refs. In Russian.

Experimental investigation of the dynamics of the changes in the bioelectric activity of various regions of the brain and the vegetative functions of the organism under conditions of hypoxia developing at various rates. The test animals were rabbits aged from 4 to 90 days. Hypoxia was produced in a barochamber at ascent rates of 2 and 15 m/sec. The overall results indicate that the adaptive reaction of the organism to hypoxia for animals of all ages is very complex and consists of numerous functional components. It embraces both vital vegetative functions and the bioelectric processes in the brain tissue. V. P.

A68-38291 #
INFLUENCE OF A PROLONGED STAY UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND RELATIVE ISOLATION ON MAN [VLIIANIE NA CHELOVEKA DLITEL'NOGO PREBYVANIIA V USLOVIIAKH PONIZHENNOGO BAROMETRICHESKOGO DAVLENIIA I OTNOSITEL'NOI IZOLIATSII].
D. I. Ivanov, V. B. Malkin, I. N. Cherniakov, V. L. Popkov, E. O. Popova, A. B. Flekkel', G. A. Arutiunov, V. G. Terent'ev, P. V. Buianov, N. A. Vorob'ev, and G. G. Sturua.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 269-280. 8 refs. In Russian.

Discussion of experiments aimed at determining the effects of a 30-day seclusion of a human subject in a small chamber (5 m^3) under conditions corresponding to heights of 3000, 5000, and 7000 m and to atmospheric oxygen partial pressures ranging from 150 to 200 mm Hg, and at determining the nature and directivity of the functional associated with these unusual conditions. Clinical observations revealed moderate increases in the latency period and in the amplitude of the knee reflex. The magnitude of static reflexes increased (from 3 to 8 mm), while the unconditional vascular reflexes increased in some and decreased in other cases. Subjects who had previously undergone long-lasting experiments were found to be more resistant to these effects. This suggests that special training might be used to good advantage. V. P.

A68-38292 #
INFLUENCE OF ADAPTATION TO HIGH-MOUNTAIN CONDITIONS ON THE RESISTANCE OF MAN TO ACUTE HYPOXIA AND HIGH TEMPERATURES [VLIIANIE ADAPTATSII K VYSOKOGOR'IU NA USTOICHIVOST' CHELOVEKA K OSTROI GIPOKSII I VYSOKOI TEMPERATURE].
V. B. Malkin and G. D. Iukhnovskii.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 280-288. 6 refs. In Russian.

Experimental investigation aimed at determining the expediency of using adaptation to high-altitude conditions as a means of increasing the resistance of man to various flight factors. The adaptation consisted in staying for 12 days at an altitude of 2000 m, 12 days at altitudes from 3800 to 4200 m, and for 5 days back at 2000 m. In some cases, the stay at 3800 to 4200 m was extended to 20 days.

Following acclimatization, most of the subjects could sustain a 30-min stay at 7000 m without recourse to oxygen. The resistance to high temperatures, however, proved to be substantially impaired. V.P.

A68-38293 #
ADAPTATION TO HYPOXIA AS A MEANS OF INCREASING THE RESISTANCE OF MAN TO THE EFFECT OF TRANSVERSE ACCELERATIONS [ADAPTATSIIA K GIPOKSII KAK SPOSOB POVYSHENIIA USTOICHIVOSTI CHELOVEKA K VOZDEISTVIIU POPERECHNYKH PEREGRUZOK].
A. R. Kotovskaia, P. V. Vasil'ev, R. A. Vartbaronov, and S. F. Simpura.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 288-293. 17 refs. In Russian.

Investigation aimed at studying the effect of repeated and one-time acclimatization to high altitudes on the resistance to transverse accelerations, and to gain insight into peculiarities of nonspecific-adaptation processes. Seven of the 15 test subjects were experienced mountain climbers. Acclimatization involved stays of 35 to 41 days at altitudes between 2 and 3 km and 4 and 7 km. The maximum sustainable loads prior to and after acclimatization demonstrate the efficiency of this approach. A comparison of certain physiological reactions is shown to provide information concerning possible adaptation mechanisms. The need for further studies of the mechanism of nonspecific adaptation is indicated. V.P.

A68-38294 #
FURTHER INVESTIGATIONS OF CHANGES IN THE OSMOTIC RESISTIVITY OF ERYTHROCYTES DURING HIGH-MOUNTAIN ACCLIMATIZATION [PRODOLZHENIE ISSLEDOVANII IZMENENIIA OSMOTICHESKOI REZISTENTNOSTI ERITROTSITOV PRI AKKLIMATIZATSII K VYSOKOGOR'IU].
Z. I. Barbashova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 293-298. In Russian.

Investigation of a correlation between changes in the osmotic resistivity of erythrocytes and acclimatization to high-altitude conditions, on the basis of results obtained with test subjects some of whom were experienced mountain climbers, while the rest were adult and adolescent athletes of both sexes. A pronounced correlation was established in 14 out of 17 cases tested. The fact that no correlation was observed in three cases indicates that the osmotic resistivity of erythrocytes should be used with caution as a test of the general resistivity of the organism and of the training effectiveness. V.P.

A68-38295 #
INFLUENCE OF HYPEROXIA ON THE DYNAMICS OF ANIMAL ERYTHROPOIESIS [O VLIIANII GIPEROKSII NA DINAMIKU ERITROPOEZA ZHIVOTNYKH].
A. M. Shmeleva and I. S. Breslav.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 298-304. 14 refs. In Russian.

Experimental investigation showing that the effect of oxygen on the blood system need not be always the same. Depending on the degree to which the partial oxygen pressure increases in the medium, on the duration of the exposure of the organism to such a medium, and the degree of adaptation of the organism to hyperoxial effects, the influence of oxygen can either suppress or enhance the erythropoiesis. V.P.

A68-38296 #
MEANS OF REDUCING THE TOXIC EFFECT OF CARBONIC ACID ON THE ORGANISM [VOZMOZHNOSTI SNIZHENIIA TOKSICHESKOGO DEISTVIIA UGLEKISLOTY NA ORGANIZM].
V. P. Zagriadskii, O. Iu. Sidorov, and E. K. Sulimo-Samuillo.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 305-310. 10 refs. In Russian.

Experimental investigation showing that in the human organism there exist complex interactions between biologically active gases such as oxygen and carbon dioxide. An increase in the oxygen concentration has a pronounced effect on the toxicity of carbon dioxide. It appears that these gases affect primarily the fermentative tissue systems, the degree of activity of which is responsible for the optimum conditions for metabolic processes. V.P.

A68-38297 #
PROBLEMS ASSOCIATED WITH TRAINING THE HUMAN ORGANISM TO SUSTAIN TEMPERATURE EFFECTS WITH THE AID OF INCREASING THE TEMPERATURE RESISTANCE [NEKOTORYE VOPROSY TRENIROVKI ORGANIZMA CHELOVEKA K TEMPERATURNYM VOZDEISTVIIAM V TSELIAKH POVYSHENIIA TEPLOVOI USTOICHIVOSTI].
P. V. Buianov, A. V. Beregovkin, and M. A. Migulina.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 310-319. 16 refs. In Russian.

Experimental investigation showing that regardless of the specific training method employed, the adaptation time of the human body to high temperatures resulting from the training is relatively short. Normally this time does not exceed 10 to 30 days, depending on the magnitude and cycle of the effect employed in the training. In most cases, the training period is twice the period during which the training-induced adaptation may be still observed. V.P.

A68-38298 #
PROBLEM OF NORMALIZING NOISE IN SPACECRAFT CABINS DURING PROLONGED FLIGHTS [K PROBLEME NORMIROVANIIA SHUMOV V KABINAKH KOSMICHESKIKH KORABLEI PRI DLITEL'NYKH POLETAKH].
E. M. Iuganov, Iu. V. Krylov, and V. S. Kuznetsov.
(International Astronautical Federation, International Astronautical Congress, 16th, Athens, Greece, Sept. 13-18, 1965, Paper.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 319-327. 20 refs. In Russian.
[For abstract see issue 23, page 3394, Accession no. A65-35255]

A68-38299 #
CONDITION OF THE ACOUSTIC ANALYZER FUNCTION DURING A PROLONGED EXPOSURE OF MAN TO AN ARTIFICIAL ATMOSPHERE [SOSTOIANIE FUNKTSII SLUKHOVOGO ANALIZATORA PRI MNOGOSUTOCHNOM PREBYVANII CHELOVEKA V USLOVIIAKH ISKUSSTVENNOI ATMOSFERY].
Iu. V. Krylov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 327-331. 10 refs. In Russian.

Experimental investigation of the acoustic function of individuals subjected to an artificial atmosphere for 25 to 30 days. The auditory thresholds of air conductivity at 125, 250, 500, 1000, 3000, 4000, 6000, and 8000 Hz were studied in each of the three series of the experiment. The readaptation at a frequency of 1000 Hz after a 3-min exposure to white noise of an intensity of 90 dB was also studied. The test subjects of the first series, subjected to a reduced barometric pressure (380 mm Hg) at normal oxygen partial pressure (15 to 160 mm Hg), revealed a certain constancy of auditory sensitivity dynamics. Readaptation lasted from 45 to 70 sec to 110 to 150 sec, depending on the duration of exposure. The subjects of the second series, exposed for 30 days to an atmosphere containing 1 to 2% CO_2 did not exhibit any unfavorable changes in the acoustic analyzer. This proved to be true also to subjects exposed for 25 days to a helium-oxygen atmosphere, where the readaptation time varied from 40 to 180 sec. V.P.

A68-38300 #
BIOLOGICAL EFFECT OF WIDE-BAND INTENSIVE NOISE ON THE ANIMAL ORGANISM [BIOLOGICHESKOE DEISTVIE SHIROKOPOLOSNOGO INTENSIVNOGO SHUMA NA ORGANIZM ZHIVOTNYKH].
V. I. Ponomar'kov, A. Iu. Tysik, V. I. Kudriavtseva, A. S. Barer, V. K. Kostin, V. E. Leshchenko, R. M. Morozova, L. V. Nosokin, and A. N. Frolov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 331-334. 7 refs. In Russian.

Experimental investigation of the biological effect of wide-band 155-dB noise on the organism of dogs, with particular reference to pathomorphological changes of the respiratory system. Changes in the electroencephalograms, electrocardiograms, and respiration rate were also studied. All animals were placed with their backs toward the noise source (105 to 155 db) for exposures varying from 0.6 to 3.5 sec. Autopsy following 1.5 to 2 hr of exposure (the animals having been killed by various means) revealed a 3-mm-diam hemorrhage in the form of convex bubbles below the pleura. This diameter was never exceeded at any of the sound levels employed.

A68-38301 #
EFFECT OF NOISE ON THE FUNCTIONS OF THE ADRENAL CORTEX AND THYROID GLAND AND ON THE HIGHER NERVOUS ACTIVITY OF WHITE RATS [VLIIANIE ZVUKA NA FUNKTSIIU KORY NADPOCHECHNIKOV, SHCHITOVIDNOI ZHELEZY I VYSSHUIU NERVNUIU DEIATEL'NOST' BELYKH KRYS].
T. S. Barutkina, T. T. Zarubailo, M. I. Mitiushov, A. N. Panov, V. V. Pakitskaia, and E. V. Sokolova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 334-342. 18 refs. In Russian.

Discussion of an experimental investigation in which white rats were exposed to an acoustic signal of 70 dB (frequency 650 Hz and a duration of 17 sec at intervals of 13 sec). The total exposure time varied from 1 hr to 14 days. The results of these exposures on the functioning of the adrenal cortex and thyroid gland and on the higher nervous system of the animals are presented in tabular form. V.P.

A68-38302 #
INFLUENCE OF HYPODYNAMIA ON THE NITROGEN METABOLISM AND THE MEANING OF PROPORTIONED PHYSICAL LOADS FOR THE CONSERVATION OF NITROGEN EQUILIBRIUM [O VLIIANII GIPODINAMII NA AZOTISTYI OBMEN I ZNACHENII DOZIROVANNYKH FIZICHESKIKH NAGRUZOK DLIA SOKHRANENIIA AZOTISTOGO RAVNOVESIIA].
Iu. K. Syzrantsev.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 342-347. 19 refs. In Russian.

Experimental investigation of the shifts in the nitrogen metabolism of young healthy individuals subjected to prolonged bed rest (water basin, seclusion in small chambers) with total inactivity and also when physical exercises were included. The total nitrogen excretions recorded at the various activity levels are tabulated. V.P.

A68-38303 #
METABOLISM UNDER CONDITIONS OF LIMITED MOBILITY AND QUALITATIVELY DIFFERING DIETS [OBMEN VESHCHESTV V USLOVIIAKH ORGANICHENNOI PODVIZHNOSTI PRI KACHESTVENNO RAZLICHNOM PITANII].
Iu. F. Udalov, R. V. Kudrova, M. I. Kuznetsov, P. P. Lobzin, V. A. Petrovykh, I. G. Popov, I. A. Romanova, Iu. K. Syzrantsev, A. M. Terpilovskii, L. N. Rogatina, and N. A. Chelnokova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 348-355. 6 refs. In Russian.

Investigation of the effect of qualitatively differing diets on the metabolism characteristics under conditions of hypodynamia. The results obtained in seven experiments involving six young healthy test subjects are tabulated. The data obtained indicate that, under these conditions, the daily ration should be maximally balanced (with respect to the content of the individual components) with energy losses. Otherwise, appreciable changes in metabolism, compared to conditions of unrestricted motion may occur. V.P.

A68-38304 #
INVESTIGATION OF SOME ASPECTS OF THE HUMAN NUTRITIONAL STATUS UNDER CONDITIONS OF A PROLONGED STAY IN THE HORIZONTAL POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS [ISSLEDOVANIE NEKOTORYKH STORON PISHCHEVOGO STATUSA CHELOVEKA V USLOVIIAKH DLITEL'NOGO PREBYVANIIA V GORIZONTAL'NOM POLOZHENII I POSLEDUIUSHCHEGO VOZDEISTVIIA PEREGRUZOK].
V. A. Petrovykh, R. V. Kudrova, M. I. Kuznetsov, P. P. Lobzin, I. G. Popov, I. A. Romanova, Iu. K. Syzrantsev, A. M. Terpilovskii, Iu. F. Udalov, and N. A. Chelnokova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 355-363. 6 refs. In Russian.

Investigation of the shifts in the metabolism of healthy subjects subjected to bed rest for periods of 10 and 15 days prior to exposure to overloads. The daily ration consisted of 105 grams of proteins, 126 grams of fats, and 371 grams of carbohydrates, amounting to a total of 2745 cal. The results of the investigation are given in eight tables. These indicate that due to the decreased metabolism in the muscular tissue, there is an increase in the secretion of urea, ammonia, amino acid, and uric acid. The basic indices of the metabolism of lipids and the enzyme activity of the stomach glands remained practically unchanged. V.P.

A68-38305 #
EXPERIENCE IN THE USE OF A BIOMASS OF UNICELLULAR SEAWEEDS IN HUMAN FOOD RATIONS [OPYT ISPOL'ZOVANIIA BIOMASSY ODNOKLETOCHNYKH VODOROSLEI V PITANII CHELOVEKA].
Iu. I. Kondrat'ev, V. P. Bychkov, A. S. Ushakov, and E. Ia. Shepelev.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 363-370. 15 refs. In Russian

Review of experience gained in domestic and foreign experiment in which a biomass of Chlorella, Scenedesmus, and other algal cultures was added in a strictly controlled and varied fashion to human food rations. It was found that the human organism could well sustain additions amounting to 100 g per day. Symptoms caused by the consumption of larger amounts in the various experiments are discussed and compared. V.P.

A68-38306 #
MATHEMATICAL METHOD FOR CALCULATING THE AMOUNT OF PRODUCTS REQUIRED FOR A GIVEN FOOD RATION FROM A LIMITED ASSORTMENT OF PRODUCTS [MATEMATICHESKII METOD RASCHETA NEOBKHODIMOGO KOLICHESTVA PRODUKTOV DLIA ZADANNOGO RATSIONA PITANIIA IZ ORGANICHENNOGO ASSORTIMENTA PRODUKTOV].
M. F. Fomin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 370-382. In Russian.

Derivation of relations which make it possible to select a food ration with a prescribed composition and calorific value from a given assortment of products. If the food ration is specified and the assortment of products is known, the relations proposed make it possible to calculate the quantitative consumption of each product. V.P.

A68-38307 #
HETEROTROPHIC ORGANISMS AS A HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS [GETEROTROFNYE ORGANIZMY-ODIN IZ ISTOCHNIKOV PITANIIA CHELOVEKA V DLITEL'NYKH KOSMICHESKIKH POLETAKH].
V. I. Iazdovskii and G. S. Ratner.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 382-388. 13 refs. In Russian.

Development of a scheme for including heterotrophic organisms into the human nutrition system. The various aspects of cultivating such organisms in a spacecraft environment are examined. A biomass of such bacteria as Lactobacillus and Propionibacterium could well supplement the animal protein requirements of the human organism. The use of mollusks such as Artemia salina L. is also considered. V.P.

A68-38308 #
WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS [VODOOBESPECHENIE CHLENOV EKIPAZHA,V KOSMICHESKOM POLETE].
A. A. Moiseev, Iu. S. Koloskova, Iu. E. Siniak, and S. V. Chizhov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 389-400. 23 refs. In Russian.

Discussion of methods of creating an artificial water-regeneration cycle, on the basis of physicochemical or biological processes for prolonged space flights. The methods examined include distillation at atmospheric pressure, distillation in vacuum, extraction, distillation in vacuum in combination with high-temperature pyrolysis of volatile compounds, catalytic methods at atmospheric and low pressures, the lyophilization method, and the use of semipermeable membranes. Specific features of the water regenerated by these methods are examined. V.P.

A68-38309 #
POSSIBILITIES OF UTILIZING WATER CONDENSED FROM A MANNED-CABIN ATMOSPHERE FOR DRINKING AND OTHER NUTRITION PURPOSES [O VOZMOZHNOSTI ISPOL'ZOVANIIA VODY, SKONDENSIROVANNOI IZ ATMOSFERY OBITAEMOI KABINY DLIA PIT'IA I DRUGIKH PISHCHEVYKH TSELEI].
V. S. Khalturin, E. Ia. Shepelev, V. A. Kriuchkov, and N. A. Gaidamakin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 400-408. 5 refs. In Russian.

Discussion of some preliminary results of a toxicological investigation of the water condensed from the atmospheric vapor in a hermetically closed, manned space cabin. The effectiveness of the purification of the condensate by means of ion-exchange resins and activated carbons was also studied. The suitability of the water thus obtained for drinking purposes was tested on young rats prior to being used in human drinking rations. V.P.

A68-38310 #
METHODS AND MEANS OF MAXIMUM SUPPRESSION OF MICROFLORA IN SMALL COMPARTMENTS DESIGNED FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS [METODY I SREDSTVA MAKSIMAL'NOGO SNIZHENIIA MIKROFLORY V POMESHCHENIIAKH MALOGO OB'EMA, PREDNAZNACHENNYKH DLIA PROVEDENIIA DLITEL'NYKH EKSPERIMENTOV S ISPYTATELIAMI].
V. I. Vashkov, E. N. Nikiforova, N. V. Ramkova, and R. V. Adamov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 408-412. In Russian.

Description of an elaborate procedure for eliminating the danger arising from such bacteria as the staphylococcus and streptococcus to test subjects confined in closed-off small-volume environments for long periods of time. The procedure was found to be highly effective wherever it was used. It involves a variety of disinfection, decontamination, and sterilization measures aimed at eliminating the presence (and multiplication) of bacteria, in particular, the staphylococcus and streptococcus in the chamber. V.P.

A68-38311 #
INVESTIGATION OF THE CONDITION OF HUMAN SKIN UNDER PROLONGED INADEQUATE SKIN CARE [ISSLEDOVANIIA SOSTOIANIIA KOZHI CHELOVEKA V USLOVIIAKH DLITEL'NOGO OGRANICHENIIA EE GIGIENICHESKOI OBRABOTKI].
I. G. Popov, V. V. Borshchenko, F. K. Savinich, M. I. Kozar', and A. M. Finogenov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 413-420. In Russian.

Discussion of experiments in which the process of contamination of the human body in a simulated spacecraft environment was studied by confining healthy 19 to 26 year-old male subjects in such an environment for 23 to 60 days. The portions of the body covered by clothing were not washed at all; face and hands were washed periodically with a water/alcohol solution. Data concerning the accumulation of chlorides and organic substances on the skin and clothing of the test subjects are tabulated, together with skin sickness data. V.P.

A68-38312 #
BASIC PERSONAL HYGIENE REQUIREMENTS FOR ASTRONAUTS [OSNOVNYE TREBOVANIIA K SREDSTVAM LICHNOI GIGIENY KOSMONAVTOV].
V. V. Levashov and A. M. Finogenov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 420-424. In Russian.

Formulation of tentative hygienic recommendations for sustaining the physiological constants of the human skin during prolonged space flights. The recommendations are aimed primarily at ensuring that the skin is freed of decomposition products of the sebaceous and sweat glands, epidermal horny squamae, dust particles, and other pollutions. They are also aimed at sustaining normal functioning of the skin and its admissible physicomechanical properties and biochemical constants. V.P.

A68-38313 #
OBJECTIVE EVALUATION OF THE DEODORIZING AND REFRESHING EFFECT OF CERTAIN PREPARATIONS FOR THE HYGIENE OF THE ORAL CAVITY UNDER SPECIFIC CONDITIONS [OB'EKTIVNAIA OTSENKA DEZODORIRUIUSHCHEGO I OSVEZHAIUSHCHEGO DEISTVIIA NEKOTORYKH SREDSTV DLIA GIGIENY POLOSTI RTA V SPETSIFICHESKIKH USLOVIIAKH].
Iu. A. Fedorov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 424-427. 7 refs. In Russian.

Comparative investigation of the refreshing and deodorizing effect of toothpastes and other preparations, the use of which substantially reduces the content of ammonium, nitrites, and nitrates in the oral cavity and also influences the qualitative oxidability indices and pH. It is shown that these data can be expressed quantitatively, making it possible to evaluate and select the most effective preparations for astronauts' oral hygiene. V.P.

A68-38314 #
GASEOUS TOXIC SUBSTANCES PRODUCED BY STORED HUMAN FECES [TOKSICHESKIE GAZOOBRAZNYE VESHCHESTVA, VYDELIAEMYE PRI KHRANENII CHELOVECHESKIKH FEKALII].
V. V. Kustov, V. I. Mikhailov, L. T. Poddubnaia, and L. N. Pogatina.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 428-432. 7 refs. In Russian

Study of the gaseous toxic products given off by human feces immediately after discharge or during 5-day storage at 18 to 20°C. The amounts of NH_3, aliphatic amines, mercaptans, H_2S, phenols, indole and skatole, fatty acids, nitrogen oxides, CO, and hydrocarbons liberated from samples in airtight 8-liter desiccators are determined by standard methods, and the results are presented in tabular form. V.Z.

A68-38315 #
GASEOUS TOXIC SUBSTANCES PRODUCED BY STORED URINE [TOKSICHESKIE GAZOOBRAZNYE VESHCHESTVA, VYDELIAIUSHCHIESIA PRI KHRANENII MOCHI].
V. V. Kustov, V. I. Mikhailov, and L. T. Poddubnaia.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 432-435. 6 refs. In Russian.

Study of gaseous toxic products liberated by human urine when air is drawn through 200-ml specimens at 38°C. The amounts of liberated NH_3, aliphatic amines, phenols, mercaptans, H_2S, acetone fatty acids, CO, and hydrocarbons are tabulated. Also given are the results for urine specimens after 3-day storage at 18 to 20°C. V.Z.

A68-38316 #
SEARCH FOR CHEMICAL PREPARATIONS FOR THE PRESERVATION OF FECES UNDER CONDITIONS OF SPACE FLIGHT [IZYSKANIE PREPARATOV DLIA KONSERVATSII FEKALII PRIMENITEL'NO K USLOVIIAM KOSMICHESKOGO POLETA].
L. N. Rogatina.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 435-438. In Russian.

Investigation of the effectiveness of a group of 24 heavy metal salts, ammonium quaternary compounds, antibiotics, and oxidizers as feces preservatives during space flights. These preparations are added in a ratio of 1:10 to 50-g feces samples, which are then kept for 100 days in darkness at room temperature. Bacteria counts on culture media indicate AgF, $AgNO_3$, $(Ag)_2SO_4$, Ag_2O, and $CuSO_4$ as effective urine preservatives. V.Z.

A68-38317 #
MEDICAL CARE DURING LONG SPACE FLIGHTS [K VOPROSU MEDITSINSKOGO OBESPECHENIIA DLITEL'NYKH KOSMICHESKIKH POLETOV].
G. L. Iaroshenko, V. G. Terent'ev, and V. A. Chichkin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 439-442. In Russian.

Estimation of the probability of health disorder of spacecraft crew members based on statistical data for the members of Soviet observational stations in the Antarctic. A formula, based on the Poisson law, with these data substituted for its coefficients, is used for estimating the health disorder expectancy of spacecraft crew members. A total of 14 specific diseases and disorders are covered. V.Z.

A68-38318 #
CERTAIN PHYSIOLOGICAL ASPECTS OF THE APPLICATION OF HYPOTHERMIA IN SPACE MEDICINE [NEKOTORYE FIZIOLOGICHESKIE ASPEKTY ISPOL'ZOVANIIA GIPOTERMII V KOSMICHESKOI MEDITSINE].
P. V. Vasil'ev and G. D. Glod.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 443-450. 47 refs. In Russian.

Results of a tentative study of the preventive effect of certain medical procedures on the physiological reflexes of the organism to cooling. Groups of dogs and white rats were given various combinations of weak barbiturates, urethane, and relaxants, or exposed to hypercapnia or hypoxia during external cooling by air in an attempt to determine the depressing effect of these conditions on the responses of the respiratory system, blood circulation, and gas exchange to cooling. Possible applications of these techniques in space medicine are mentioned. Further studies are urged. V.Z.

A68-38319 #
CERTAIN RESULTS OF A PHYSIOLOGICAL AND ECOLOGICAL STUDY OF A CHLORELLA CULTURE AS A COMPONENT OF A CLOSED ECOLOGICAL SYSTEM [NEKOTORYE ITOGI FIZIOLOGO-EKOLOGICHESKOGO ISSLEDOVANIIA KUL'TURY KHLORELLY KAK ZVENA ZAKRYTOI EKOLOGICHESKOI SISTEMY].
E. Ia. Shepelev and G. I. Meleshko.
(International Astronautical Federation, International Astronautical Congress, 16th, Athens, Greece, Sept. 13-18, 1965, Paper.)
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 451-460. 24 refs. In Russian.
[For abstract see issue 01, page 18, Accession no. A66-10981]

A68-38320 #
BIOTECHNOLOGICAL AUTOMATIC CONTROL SYSTEM FOR THE PROCESS OF PHOTOSYNTHESIS [BIOTEKHNICHESKAIA SISTEMA SAMOREGULIROVANIIA PROTSESSOM FOTOSINTEZA].
M. A. Khvedelidze, S. I. Dumbadze, V. G. Apridonidze, I. S. Zaalishvili, T. L. Khomeriki, Kh. G. Gagua, M. Sh. Lomsadze, and B. T. Zhorzholiani.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 460-469. 17 refs. In Russian.

Description of an experimental setup for studying the photoelectrical characteristics of the photosynthetic activity of Chlorella by an automatically controlled amperemetric technique using a measuring circuit with platinum electrodes and a set of plexiglass vessels with Chlorella cultures. Six-month observations of the photosynthetic activity of Chlorella cell suspensions exposed alternately to light and darkness are carried out in the setup. Optimal alternations of periods of light and darkness are defined as a result. V.Z.

A68-38321 #
STUDY OF PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH [IZUCHENIE FOTOSINTEZA KHLORELLY PRI NEIZMENNYKH USLOVIIAKH ROSTA].
I. V. Aleksandrova and E. A. Ivanov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 470-474. In Russian.

Attempt to determine spontaneous fluctuations in the photosynthetic activity of Chlorella cells under constant environmental conditions. A constant temperature and illumination level, and a steady circulation of the Chlorella cell suspension in a closed volume of 7 to 8 liters were maintained in an experimental setup while constant CO_2/O concentrations were maintained in the air bubbled through the suspension and were recorded continuously by a gas analyzer, together with the rates of photosynthesis. Curves for the fluctuations of Chlorella photosynthetic activity are given. V.Z.

A68-38322 #
EFFECT OF CERTAIN GASEOUS IMPURITIES IN AN INHABITED ATMOSPHERE ON THE PHOTOSYNTHETIC ACTIVITY OF CHLORELLA [O VLIIANII NEKOTORYKH GAZOOBRAZNYKH PRIMESEI OBITAEMOI ATMOSFERY NA FOTOSINTETICHESKUIU DEIATEL'NOST' KHLORELLY].
M. M. Korotaev, V. V. Kustov, G. I. Meleshko, V. I. Mikhailov, and E. Ia. Shepelev.

IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 475-480. 5 refs. In Russian.

Preliminary results of a study of the effect of anthropogenic components of an inhabited atmosphere and the air exhaled by man on the photosynthetic activity of Chlorella cell suspensions. CO concentrations from 0.04 to 0.1 mg/liter, NH_3 concentrations from 0.02 to 0.04 mg/liter, acetone concentrations from 0.01 to 0.06 mg/liter, and H_2S concentrations of about 0.0034 mg/liter are used in the experiments. Tables are given for the effects of these gases and exhaled air on the rates of Chlorella photosynthetic activity. Increased CO_2 assimilation rates in the presence of CO are noted tentatively. V.Z.

A68-38323 #
CERTAIN GROWTH AND GAS EXCHANGE CHARACTERISTICS OF THE ALGA ANACYSTIS NIDULANS IN AN INTENSIVE CULTURE [NEKOTORYE KHARAKTERISTIKI ROSTA I GAZOOBMENA VODOROSLI ANACYSTIS NIDULANS V INTENSIVNOI KUL'TURE].
T. B. Galkina, I. I. Kashkovskii, O. A. Kurapova, E. K. Lebedeva, G. I. Meleshko, and Iu. N. Ul'ianin.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 480-486. 12 refs. In Russian.

Study of the productivity, gas metabolism, and chemical composition of Anacystis nidulans cells carried out under intensive culture conditions in the search for new seaweed species performing photosynthesis. The alga cell suspensions are grown on nutritive media of KNO_3, K_2HPO_4, $MgSO_4$, KCl, NaCl, $FeSO_4$, $CaSO_4$, and trace elements in a rotating reactor with an illumination of 20 to 60 kilolux from incandescent lamps in an atmosphere of 1 to 5% CO_2. The results indicate that this alga can be used along with Chlorella for photosynthesis under intensive cultivation conditions. V.Z.

A68-38324 #
SELECTION OF THE ANIMAL COMPONENTS OF CLOSED ECOLOGICAL SYSTEMS [K VOPROSU O PODBORE ZHIVOTNYKH KOMPONENTOV ZAMKNUTYKH EKOLOGICHESKIKH SISTEM].
N. V. Mironova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 486-497. 14 refs. In Russian.

Evaluation of Tilapia mossambica, a tropical fish, as a possible component of spacecraft life-support systems. Aquarium conditions favorable for Tilapia proliferation are given. Six-month experiments are conducted to determine the ability of Tilapia to consume diets with various plant ingredients gradually substituted for animal ingredients. Tabulated data on growth and reproduction dynamics are given for experimental fish. Further studies of Tilapia as a possibly suitable life-support system component are suggested. V.Z.

A68-38325 #
GROWTH OF TILAPIA (TILAPIA MOSSAMBICA PETERS) IN RELATION TO FOOD [ROST TILIAPII (TILAPIA MOSSAMBICA PETERS) V ZAVISIMOSTI OT PITANIIA].
N. V. Mironova and T. A. Skvortsova.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 498-505. In Russian.

Aquarium observations of the growth of young Tilapia fish kept on normal animal food, mixed animal/vegetable food, and vegetable and herb food for a period of seven months. Tabulated results are given for weight growth, for the food amounts required, and for the ratios between food consumed and weight gained. The possibility of weight-gain stimulation with slightly enriched vegetable food is indicated. V.Z.

A68-38326 #
COMPARATIVE EVALUATION OF THE GROWTH OF TILAPIA (TILAPIA MOSSAMBICA PETERS) FED WITH CHLORELLA AND OTHER FODDER [SRAVNITEL'NAIA OTSENKA ROSTA TILIAPII (TILAPIA MOSSAMBICA PETERS) PRI PITANII IKH KHLORELLOI I DRUGIMI KORMAMI].
N. V. Mironov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 505-512. In Russian.

Observations of growth in groups of young Tilapia fish kept on dry Chlorella diets combined with fish flour, sorrel, dry yeast and additions of certain animal food. Length, weight, and weight gain in relation to food consumed are given in tabular form for the experimental fish. The eagerness with which Chlorella was eaten by the fish is noted. V.Z.

A68-38327 #
EFFECT OF VIBRATIONAL AND LINEAR ACCELERATIONS ON FISH [VLIIANIE NA RYB VIBRATSIONNYKH I LINEINYKH PEREGRUZOK].
V. Ia. Mamontov and G. B. Mel'nikov.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 512-521. In Russian.

Discussion of the effect of vibrational accelerations at about 14 g at various frequencies on fish. Vibration frequency is found to be an important factor in the reaction of fish to acceleration stresses. The strongest physiological effect of vibrations on fish, with cases of mortality, is at 80 to 90 Hz. The occurrence of resonance effects at these frequencies is assumed. V.Z.

A68-38328 #
EFFECT OF GAMMA RAYS AND PROTONS ON CHLORELLA [DEISTVIE γ-LUCHEI I PROTONOV NA KHLORELLU].
I. D. Anikeeva, E. N. Baulina, and V. A. Shevchenko.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 521-524. 7 refs. In Russian.

Investigation of the effect of 500 to 5000-rad doses of Co^{60} gamma radiation and 660-MeV protons on Chlorella suspensions. Irradiated Chlorella cells were grown on a nutritive medium in an incubator and their survival rate and mutability were estimated by macrocolony techniques as a function of the radiation doses. The results are given in diagram form. V.Z.

A68-38329 #
STUDY OF THE AIR AND WATER REGENERATION BY HIGHER PLANTS IN A CLOSED VOLUME [IZUCHENIE REGENERATSII VOZDUKHA I VODY VYSSHIMI RASTENIIAMI V ZAMKNUTOM OB'EME].
N. T. Nilovskaia and M. M. Bokovaia.
IN: PROBLEMS OF SPACE BIOLOGY. VOLUME 7 [PROBLEMY KOSMICHESKOI BIOLOGII. VOLUME 7].
Edited by V. N. Chernigovskii.
Moscow, Izdatel'stvo Nauka, 1967, p. 524-534. 14 refs. In Russian.

Results of a study of air and water regeneration by a group of vegetable plants in a closed volume. For most of the experimental plants, including cabbage, potatoes, beans and radishes, the CO_2 assimilation rates were 50 to 60 mg/day per planted square meter, with sugar beet, table beet, and soybeans showing maximum rates of up to 102 to 152 mg. The CO_2 absorption rates showed a nonuniform variation pattern during the day, with a depression between noon and 3 p.m. Amounts of 3 to 8.5 g CO_2 per planted square meter were released by plants during the dark period of the day. The transpiration rates were 19 to 40 g H_2O per square meter of foliage. V.Z.

A68-38335
PERCEPTION OF SPACE AND TIME IN OUTER SPACE [VOSPRIIATIE PROSTRANSTVA I VREMENI V KOSMOSE].
A. A. Leonov and V. I. Lebedev.
Moscow, Izdatel'stvo Nauka, 1968. 118 p. 101 refs. In Russian.

In this book, a cosmonaut and a physician discuss specific features of flight dynamics on board spacecraft and of the part played by a cosmonaut in the man-vehicle system. Particular attention is given to the changes in the environmental conditions and, correspondingly, in the psychophysiological mechanisms of space and time perception beyond the sphere of influence of the earth. The effects of weightlessness, prolonged isolation in tiny premises, emotional stress, and other space factors on the perception of time by man are examined in detail. The personal impressions of Leonov during his walk in space are described. The principal aspects of training astronauts to orient themselves in space are examined, together with the establishment of work and rest periods for crew members. The book should be of interest to psychologists, philosophers, biologists, physicians, and people of related professions working in the field of space and aviation medicine. V.P.

A68-38482
PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT.
Margaret B. Hays and Charles A. Cassola (U.S. Naval Material Command, Naval Air Development Center, Johnsville, Pa.).
IN: ENVIRONMENTAL EFFECTS ON POLYMERIC MATERIALS. VOLUME 2 - MATERIALS.
Edited by R. T. Schwartz and D. V. Rosato.
New York, Interscience Publishers, Division of John Wiley and Sons, Inc., 1968, p. 1351-1379. 43 refs.

Discussion of exposure suits, life preservers, pressure suits, protective helmets, and body armor. Modern flight clothing must be compatible with the serviceability requirements and it varies according to the mission. Impermeability to water, sprays, and wind, resistance against high temperatures, light weight, and a streamlined form are further characteristics. High-altitude full pressure suits are to protect airmen from effects of low ambient pressures and of explosive, rapid, or slow decompression. Emergency survival equipment is mentioned and several inflation techniques using CO_2 to inflate rafts or life belts are reported. A solar seawater-distillation kit is also described. R.M.

A68-38507
LIFE SUPPORT.
John K. Jackson (McDonnell Douglas Corp., Douglas Aircraft Co., Missile and Space Systems Div., Advanced Biotechnology and Power Dept., Life and Environmental Systems Branch, Huntington Beach, Calif.).
Space/Aeronautics, vol. 50, July 31, 1968, p. 91-93, 122. 7 refs.

Consideration of significant changes about to take place in life support system design, primarily because of the plans for steadily extending the durations of manned space missions. The most important of these changes will probably be the application of regenerative subsystems for the recovery of water and oxygen. Integration with other systems is discussed, in view of its importance on extended missions. Various systems for water and oxygen recovery are evaluated, and aspects of integrated system testing are outlined. F.R.L.

A68-38510 #
HUMAN ERROR.
H. R. Willis (Lockheed Aircraft Corp., Burbank, Calif.).
The Log, vol. 28, July 1968, p. 186-190.

Examination of various causes of human errors with emphasis on those arising in a manned aircraft system. Several examples illustrating the extent of the human error involved in aircraft accidents are discussed. The possible effects of fatigue, microsleep, blinking lights inducing unusual stimulation of the brain, and psychological causes leading to a false hypothesis are described. It is concluded that human errors can be the result of a complex chain of events which are very difficult to understand and to analyze. In aviation, a special program should be examined and developed in order to lessen the potential for human error. Z.W.

A68-38515 *
SITE OF MANGANESE FUNCTION IN PHOTOSYNTHESIS.
George M. Cheniae and Iris F. Martin (Martin Marietta Corp., Aerospace Group, Research Institute for Advanced Studies, Baltimore, Md.).
Biochimica et Biophysica Acta, vol. 153, 1968, p. 819-837. 43 refs.
AEC Contract No. AT (30-1)-3706; Contract No. NASw-1592.

Analysis of the effect of manganese deficiency upon the flash yield of O_2 and quantum yields of photosynthesis and quinone photoreduction in Scenedesmus cells. It is shown that approximately 8 Mn occur for each E equivalent (the photochemical substrate of Photosystem II). The amount of bound Mn is linear with amount of E and not quantum yield. It is concluded that manganese functions specifically in the photochemical complex E of Photosystem II. R.M.

A68-38517 *
ELECTRODE PROBLEMS IN CENTRAL NERVOUS MONITORING IN PERFORMING SUBJECTS.
R. T. Kado and W. R. Adey (California, University, Brain Research Institute, Space Biology Laboratory, Los Angeles, Calif.).
New York Academy of Sciences, Annals, vol. 148, Feb. 1, 1968, p. 263-278. 9 refs.
Grants No. AF AFOSR 246-63; No. AF AFOSR 61-81; No. NsG-505; No. NsG-05-007-012; No. NsG-2503.

Discussion of problems involving the recording of electroencephalographic, electrocardiographic, and galvanic skin response in freely moving individuals. Implantations of electrodes in deep structures raises problems of possible mechanical damage at the electrode-tissue interface, and requires assurance of adequate mechanical fixation. Electromechanical problems associated with even minimal movements of these electrodes are solved. Other problems specifically associated with radiotelemetry of the physiological signals, due to the appearance of substantial radio signals on leads between the sensing electrodes and signal amplifiers, or coupled into amplifier input stages from common power supplies are investigated. R.M.

A68-38518 *
ADIPOSE TISSUE IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGATION STRESS.
D. D. Feller, E. D. Neville, and K. S. Talarico (NASA, Ames Research Center, Environmental Biology Div., Moffett Field, Calif.).
American Journal of Physiology, vol. 214, June 1968, p. 1434-1437. 12 refs.

Study of the fat tissue of rats under centrifugation stress. The concentration of serum glucose, free fatty acids, triglycerides, and cholesterol was measured periodically. During the first 24 hr of exposure, an increase of these substances was found in the adipose tissue, but after exposures of three days the values returned to control values. It is concluded that adipose tissue plays an important role in contributing to body energy during the acute phase of centrifugation stress in rats. R.M.

A68-38519 *
SPINACH FERREDOXIN. II - TRYPTIC, CHYMOTRYPTIC, AND THERMOLYTIC PEPTIDES, AND COMPLETE AMINO ACID SEQUENCE.
Hiroshi Matsubara and Richard M. Sasaki (California, University, Space Sciences Laboratory, Berkeley, Calif.).
Journal of Biological Chemistry, vol. 243, Apr. 25, 1968, p. 1732-1757. 55 refs.
Grants No. NsG-479; No. NsG-05-003-020.

Analyses of tryptic, chymotryptic, and thermolytic digests of various derivatives of spinach ferredoxin to determine its complete amino acid sequence. Spinach ferredoxin contains a region similar to the known bacterial ferredoxins, extending over a distance of 19 consecutive amino acid residues. This suggests a common archetype for plant and bacterial ferredoxins. An internal repetition of 9 residues occurs in the molecule of spinach ferredoxin. R.M.

A68-38525 *
OLEFINS OF HIGH MOLECULAR WEIGHT IN TWO MICROSCOPIC ALGAE.

E. Gelpi, J. Oro, H. J. Schneider, and E. O. Bennett (Houston, University, Dept. of Chemistry and Dept. of Biophysical Sciences and Dept. of Biology, Houston, Tex.).
(Geological Society of America, Annual Meeting, New Orleans, La., Nov. 20-22, 1967.)
Science, vol. 161, Aug. 16, 1968, p. 700-702. 27 refs.
Grants No. NsG-257; No. NGR-44-005-020.

The hydrocarbon composition of two algae, a golden-brown (Botryococcus braunii) and a blue-green (Anacystis montana), has been investigated by gas chromatography-mass spectrometry. Both show distributions of aliphatic hydrocarbons of odd carbon numbers in the medium and high ranges of molecular weight, with maxima at n-C_{17} and n-C_{29} for B. braunii and n-C_{17} and n-C_{29} for A. montana. With the exception of the n-heptadecane of A. montana all the hydrocarbons are monoenes, dienes, or trienes. Since certain continental sediments and oils show similar distributions of alkanes with respect to carbon number, these organisms may be the precursors of the hydrocarbons in these formations. (Author)

A68-38565 #
HUMAN PILOT AND AUTOMATIC SYSTEMS [PILOTE HUMAIN ET AUTOMATISMES].
R. Lami.
Association Française des Ingénieurs et Techniciens de l'Aéronautique et de l'Espace, Congrès International Aéronautique, 8th, Paris, France, May 29-31, 1967, Paper. 19 p. In French.

Discussion of the opinion of a pilot on the help which automatic systems might afford during instrument takeoff and landing. It is pointed out that automation is justified only to the extent that it makes it possible to reach a level of performance or safety which man cannot reach by any other means. Automatic landing often leads to long procedures because it is necessary to line up the aircraft at a considerable distance, whereas the procedure can often be made shorter by manual piloting. The consequences of the use of automatic systems for the development and training of pilots are discussed. M. F. J.

A68-38581 #
DELETERIOUS EFFECTS OF ELECTRIC CURRENTS ON THE HUMAN SYSTEM [EFFETTI DELETERI DI CORRENTI ELETTRICHE SULL'ORGANISMO UMANO].
C. F. Dalziel.
(Associazione Elettrotecnica ed Elettronica Italiana, Conference, Milan, Italy, Jan. 1967.)
Alta Frequenza, vol. 37, July 1968, p. 49-S to 56-S. 18 refs.
In Italian.

Survey of the effects of electrical currents on man. The various hazards connected with the uses of electricity are stressed, and the permissible limits of insulation scatter in the design of manual equipment and tools are established. The accidents caused to human beings by pulsating currents, and the quantitative effects of electric current on man are tabulated. M. M.

A68-38659 *
OPERANT CONDITIONING OF EYE MOVEMENT IN THE MONKEY (MACACA NEMESTRINA).
Ralph J. Berger (California, University, Crown College, Santa Cruz, Calif.).
Journal of the Experimental Analysis of Behavior, vol. 11, May 1968, p. 311-320. 11 refs.
Contract No. AF 49(638)-1387; Grants No. NsG-502; No. NsG-05-007-011.

With the horizontal electrooculographic potential as the operant, four monkeys (Macaca nemestrina) were conditioned to move their eyes at high and low rates by initial use of fixed-ratio schedules of reinforcement, followed by a changeover to multiple schedules of fixed-ratio reinforcement and discriminated differential reinforcement of low rate. These differences in rate of eye movement were not observed in a control animal given the same patterns of discriminative stimuli and deliveries of the reinforcing agent independent of its eye movements. (Author)

A68-38663 *
TRANSPORT OF SODIUM BY THE RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES.
Abraham T. K. Cockett, Yale J. Katz, and Raymond S. Moore (Harbor General Hospital, Dept. of Surgery/Urology; California, University, School of Medicine; Southern California, University, Dept. of Medicine, Los Angeles, Calif.).
Investigative Urology, vol. 5, no. 5, 1968, p. 483-491. 18 refs.
PHS Grant No. HE-09834-02; Grants No. NsG-237-62; No. NsG-05-007-003.

It has been observed previously that elevation of renal vein pressure increases renal lymphatic pressure and flow. The present study demonstrates that elevation of inferior vena cava pressure, superior to the renal veins, to levels between 13 and 40 mm Hg, is followed by a significant increase in thoracic duct lymph flow and a decrease in urine and sodium excretion. Thoracic duct lymph flow was not observed to be increased in a group of control animals following elevation of the inferior vena cava pressure. Similar renal deviation of fluid and sodium to the lymphatic system under conditions of elevated renal vein pressure can occur in congestive heart failure and may account for the sodium retention. (Author)

A68-38664 *
FACTORS AFFECTING THE SYNTHESIS AND DEGRADATION OF RIBULOSE-1,5-DIPHOSPHATE CARBOXYLASE IN HYDROGENOMONAS FACILIS AND HYDROGENOMONAS EUTROPHA.
Bruce A. McFadden (Washington State University, Dept. of Chemistry, Pullman, Wash.) and Glenn D. Kuehn.
Journal of Bacteriology, vol. 95, Mar. 1968, p. 937-946. 39 refs.
Grant No. NGR-48-001-004.

Investigation of the factors involved in the control of ribulose-1,5-diphosphate carboxylase (RDPC) in hydrogenemonas facilis and hydrogenomonas eutropha. H. facilis and H. eutropha cultured in fructose medium retained high levels of RDPC only when the following conditions were fulfilled: low aeration, $FeCl_3$ addition to fructose medium, and cell harvest at or prior to midexponential phase of growth. Repression of carboxylase synthesis was demonstrated under conditions of high oxygen tension during growth of H. eutropha on fructose. M. M.

A68-38666 *
PROBLEMS ASSOCIATED WITH THE RECOVERY OF BACTERIAL SPORES FROM SPACE HARDWARE.
Martin S. Favero (U.S. Public Health Service, National Communicable Disease Center, Phoenix, Ariz.).
Developments in Industrial Microbiology, vol. 9, 1968, p. 87-98. 12 refs.
NASA Contracts No. R-137; No. R-11-004-001.

Discussion of techniques used for assessing microbial contamination on space hardware. Heat cycles used for sterilization of space hardware are based in part on the number of bacterial spores present on the spacecraft after assembly and testing operations. Consequently, techniques used to assay aerobic and anaerobic spores must be accurate and precise. Ultrasonic energy has been used successfully to dislodge microorganisms from various types of surfaces. Cultivation techniques, however, appear to need improvement. Some spores sublethally injured by dry heat, ethylene oxide, or other environmental stresses do not exhibit visible growth when conventional media and incubation times are employed. Extended incubation, as well as media enriched with specific supplements, increases the recovery of injured spores. Problems are encountered in assaying mixed spore populations because heat shocking, which is required by many spores for maximal germination, kills some spores. Calcium dipicolinate, used as a supplement to culture media, can replace the requirement for heat shock for many types of aerobic spores. M.M.

A68-38771 *
COMPARISON OF RETICULAR AND COCHLEAR MULTIPLE UNIT ACTIVITY WITH AUDITORY EVOKED RESPONSES DURING VARIOUS STAGES INDUCED BY ANESTHETIC AGENTS. II.
Kenjiro Mori (Tokyo Women's Medical College, Dept. of Anesthesiology, Tokyo, Japan), Wallace D. Winters, and Charles E. Spooner (California, University, Brain Research Institute and Dept. of Pharmacology, Los Angeles, Calif.).

Electroencephalography and Clinical Neurophysiology, vol. 24, 1968, p. 242-248. 13 refs.
PHS Grants No. 5 TI-MH-6415-08; No. 1 ROl MH 12121-01; No. NB-02501; Grants No. NsG-237-62; No. NsG-05-007-003.

Study of the various stages of anesthesia induced by pentobarbital, halothane, ether, or nitrous oxide. The EEG, gross behavior, auditory evoked response, and multiple unit activity were recorded during the continuous progression of anesthesia induced by ether, halothane, pentobarbital and nitrous oxide. Ether induced four stages of anesthesia, halothane and pentobarbital induced three stages, and nitrous oxide induced two stages. A close correlation between changes in the level of reticular unit activity and the stage of anesthesia is demonstrated. It is also shown that the nonspecific system is highly depressed by the action of the anesthetics at a time when the auditory input is minimally affected. Z. W.

A68-38893

EXPERIMENTAL STUDY OF THE EFFECTS OF HYPOXIA AND HYPEROXIA ON GLYCEMIA [ETUDE EXPERIMENTALE DES EFFETS DE L'HYPOXIE ET DE L'HYPEROXIE SUR LA GLYCEMIE].

Pierre Michel Pingannaud (Service de Santé des Armées, Paris, France) and Philippe Cochin.

(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Nov. 17, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 81-85. 9 refs. In French.

Study, in an experimental atmosphere which approximates that found during flight, of the effects of hypoxia and hyperoxia on glycemia in rabbits. It is shown that hyperoxia and hypoxia cause a rapid increase in glycemia which in turn causes strong and repetitive variations in blood sugar. M. G.

A68-38894

EVALUATION OF THE CONSCIOUS WORK LOAD BY CARDIAC RHYTHM VARIABILITY - APPLICATION TO A PILOTING TASK [APPRECIATION DE LA CHARGE PERCEPTIVE PAR LA VARIABILITE DU RYTHME CARDIAQUE - APPLICATION A UNE TACHE DE PILOTAGE].

R. Auffret, H. Seris, A. Berthoz, and B. Fatras (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France).

(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Nov. 17, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 87-89. 14 refs. In French.

Measurements of cardiac variations as a criterion for evaluating the degree of strain involved in psychomotor activity for pilots. Electrocardiograph measurements on pilots under simulated approach conditions showed a correlation between the strain of psychomotor activity and cardiac arythmia. M. G.

A68-38895

STATISTICAL CORRELATION ON THE GENERAL PATHOLOGY OF CIVILIAN AVIATION FLIGHT CREWS [RAPPORT STATISTIQUE SUR LA PATHOLOGIE GENERALE DU PERSONNEL NAVIGANT DE L'AVIATION CIVILE].

J. Raboutet, J. Salvagniac, R. Quemerc'h, M.-J. Nicolas, and R. Carre.

(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Nov. 17, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 90-93. In French.

Statistical study of the general pathology affecting flight fitness for professional pilots, technical flying personnel, and nontechnical personnel such as air stewards and hostesses. Cardiovascular disorders were found to be the primary causes for unfitness accounting for more than 30% of the abnormalities. The various causes for unfitness are presented in a statistical graph. M. G.

A68-38896

THE PHYSIOLOGICAL EFFECTS OF A HEAT SHOCK. II [LES EFFETS PHYSIOLOGIQUES D'UN CHOC THERMIQUE. II].

Jean Colin (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne; Service de Santé des Armées, Paris, France), Y. Houdas (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne; Lille, Université, Faculté de Médecine, Lille, France), J. Timbal, and Ch. Boutelier (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France).

(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Nov. 17, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 95-103. 47 refs. In French.

Study of the psychological effects of a heat shock as determined by the onset of sweating. The following physical parameters were measured: loss of weight, skin temperature, rectal temperature, tympanic temperature, and buccal temperature. A basic ambivalent state was created at which the room temperature was 30°C, the wind was 0.2 m/sec, and the water-vapor pressure was 8 mm Hg. The temperature, wind, and water vapor pressure were then increased in successive stages. Variations in the measured physical parameters are tabulated and compared. M. G.

A68-38897

THE TRANSPORTATION OF THE SICK AND WOUNDED ON THE AIRPLANES OF REGULAR AIRLINES [LE TRANSPORT DES MALADES ET DES BLESSES SUR LES AVIONS DE LIGNE REGULIERS

Poisvert, Cara, Lafontaine, and Courillon (Compagnie Nationale Air France, Service Médical Central; Hôpital des Enfants-Malades, Groupe Hospitalier Necker-Enfants Malades, Département d'Anesthésiologie, Paris, France).

(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Oct. 20, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 104-106. In French.

Discussion of the possibility of aeromedical evacuation of patients on regular airline aircraft over long distances. Three case histories of medical evacuation are discussed. Evacuation of patients has been made possible by such improvements as pressurization, speed, soundproofing, and vibration control in civilian aviation aircraft. M. G.

A68-38898

RECTAL TEMPERATURE RHYTHM AT A FREE REIN [LE RYTHME DE LA TEMPERATURE RECTALE EN LIBRE COURS].

J. Timbal, C. Boutelier (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France), J. Colin (Service de Santé des Armées, Paris; Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France), Y. Houdas (Lille, Université, Faculté de Médecine, Lille; Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France), and M. Siffre (Institut Français de Spéléologie, France).

(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Dec. 15, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 107-114. 39 refs. In French.

Study of the rhythm of the rectal temperature on a subject isolated underground for six months. A maximum temperature difference of 1.2°C was observed over one period of three months. The maximum value was 37.2°C, and the minimum value was 36°C. A remarkable maintenance of the circadian rhythm of the rectal temperature was observed over the entire isolation period. Results of this study are applied to a discussion of long-distance aircraft flights. M. G.

A68-38899

RELATIONSHIPS BETWEEN THE ACTIVITY RHYTHM AND THE RECTAL TEMPERATURE RHYTHM AT A FREE REIN [RELATIONS ENTRE LE RYTHME D'ACTIVITE ET LE RYTHME DE LA TEMPERATURE RECTALE EN LIBRE COURS].

J. Colin (Service de Santé des Armées, Paris; Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France), J. Timbal, Ch. Boutelier (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France), Y. Houdas (Lille, Université, Faculté de Médecine, Lille; Centre d'Essais en Vol, Laboratoire de Médecine

Aérospatiale, Brétigny-sur-Orge, Essonne, France), and M. Siffre (Institut Français de Spéléologie, France).
(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Dec. 15, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 115-120. 7 refs. In French.

Discussion of the relationships between the activity cycle and the rectal temperature rhythm in a constraint-free environment based on a study by Timbal et al. (1967). The comparison is based on time intervals separated by successive awakening periods. It is suggested that the activity cycle is not capable of imposing its rhythm permanently on the circadian rhythm of the rectal temperature. M. G.

A68-38900
SUBJECTIVE AND OBJECTIVE REACTIONS TO BREAKS IN THE CIRCADIAN RHYTHM DURING EAST-WEST, AND VICE VERSA, LONG-DISTANCE COMMERCIAL FLIGHTS [LES REACTIONS SUBJECTIVES ET OBJECTIVES AUX RUPTURES DES RYTHMES CIRCADIENS LORS DES VOLS COMMERCIAUX LONGS-COURRIERS EST-OUEST ET VICE-VERSA].
J. Lavernhe, E. Lafontaine, and J. Pasquet (Compagnie Nationale Air France, Service Médical, Paris, France).
(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Dec. 15, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 121-123. 6 refs. In French.

Review of recent literature on the effects of transatlantic flight on the circadian rhythm. Changes in the regular schedule during transatlantic flight in excess of 7 hr are shown to cause readjustment periods of from 4 to 5 days. In 41% of the cases, accompanying digestive troubles - e.g., constipation - were also reported. M. G.

A68-38901
PHYSIOLOGICAL ASPECTS OF CIRCADIAN RHYTHMS [ASPECTS PHYSIOLOGIQUES DES RYTHMES CIRCADIENS].
A. Morali-Daninos and F. Cerf.
(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Dec. 15, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 124-126. In French.

Discussion of the probable existence of a circadian rhythm for psychological phenomena as well as for physiological phenomena. It is suggested that a psychological circadian rhythm may be governed by the known laws for the functioning of the central nervous system, the autotomic nervous system, and the neurohormonal relays. This rhythm disappears, however, under conditions of stress in order to allow more successful adaptations by the organism under a strange environment. M. G.

A68-38902
BIOLOGICAL RHYTHMS - REVIEW OF SOME RECENT DATA [RYTHMES BIOLOGIQUES - RAPPEL DE QUELQUES DONNEES RECENTES].
Alain Reinberg (Centre National de la Recherche Scientifique; Fondation Rothschild, Laboratoire de Physiologie, Paris, France).
(Société Française de Physiologie et de Médecine Aéronautiques et Cosmonautiques, Séance, Paris, France, Dec. 15, 1967.)
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 127-130. 59 refs. In French.

Survey of recent articles on biological rhythms in man, animals, and plants. Emphasis is placed on the various parameters of the circadian rhythm - i.e., frequency, amplitude, and phase. Techniques for measuring the circadian rhythm and the psychological rhythms of adult subjects isolated underground are discussed. Genetic and environmental factors affecting the circadian rhythm are also noted. M. G.

A68-38903
FRACTURES OF THE VERTEBRAL COLUMN IN HELICOPTER ACCIDENTS (CONCERNING 25 CASES) [LES FRACTURES DU RACHIS DANS LES ACCIDENTS D'HELICOPTERES (A PROPOS DE 25 CAS)].
R. P. Delahaye, R. Auffret (Service de Santé des Armées, Paris, France), R. Carre (Hôpitaux des Armées, France), and Farand.
Revue de Médecine Aéronautique et Spatiale, vol. 7, 2nd Quarter, 1968, p. 131-133. 5 refs. In French.

Discussion of different types of helicopter accidents, including loss of control, and the resulting injuries to the vertebral column. The location of the fractures and their pathology are studied, and a comparison is made with the types of injuries observed after crashes of regular airplanes, and with injuries resulting from parachuting and aircraft ejection. M. G.

A68-38994
SIMULTANEOUS RECORDING OF CORE TEMPERATURE AND ENERGY EXPENDITURE DURING THE HIBERNATION CYCLE OF MESOCRICETUS AURATUS.
W. D. Robertson, M. K. Yousef, and H. D. Johnson (Missouri, University, Dept. of Dairy Husbandry and Space Science Research Center, Columbia, Mo.).
Nature, vol. 219, Aug. 17, 1968, p. 742, 743. 8 refs.
Research supported by the University of Missouri.

Experiment undertaken to record continuously and simultaneously oxygen consumption and core temperature (abdominal cavity) during the three phases of hibernation (entry, bibernation, and arousal) to establish the differential rate of change between body temperature and oxygen consumption of the golden hamster. Sexually mature male hamsters were housed in individual cages in a cold room (4 $\pm 2^{\circ}$C). A temperature telemeter unit was implanted in the abdominal cavity of the animals. Measurements began during a wakeful state to establish the normal metabolic rate and body temperature. Oxygen consumption varied from 2000 to 3200 ml/kg/h and body temperature varied from 35.8 to 37.4°C. During deep hibernation, the core temperature was consistently 0.5 to 1.0°C above the room temperature. Oxygen consumption varied between 40 and 170 ml/kg/hr. P. v. T.

A68-39106 *
VISUAL SUPPRESSION DURING PASSIVE EYE MOVEMENT.
Whitman Richards (Massachusetts Institute of Technology, Dept. of Psychology, Cambridge, Mass.).
Optical Society of America, Journal, vol. 58, Aug. 1968, p. 1159, 1160. 19 refs.
NIH Grant No. MH-05673; Contract No. AF 44(620)-67-C-0085; Grant No. NsG-496.

Account of an experiment in which visual suppression during passive eye movement is compared to that during active eye movement, in order to determine whether its origin is retinal or central. Passive movements of 2° to 4°, in a time comparable to a voluntary eye movement of the same extent were induced by either tapping the eyeball near the outer canthus or by flicking the adjacent skin. Increases of the thresholds associated with both active and passive eye movements were observed. Test flashes of short wavelength (460 nm) produced very little suppression compared to the longer 580-nm test flash. Similarity in the response to frequency change in active and passive movements suggested that the same mechanism is involved in both cases, possibly one of shear forces between the vitreous and the sclera, thus making the suppression of retinal origin. P. G. M.

A68-39200 #
PROBLEMS OF SPACE TOXICOLOGY [PROBLEMY KOSMICHESKOI TOKSIKOLOGII].
V. V. Kustov and L. A. Tiunov.
Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaia, July-Aug. 1968, p. 605-609. 37 refs. In Russian.

Review of Soviet and foreign papers concerning the state of air media in airtight manned volumes. Contamination of the air of spaceship cabins with toxins emanated by synthetic materials of onboard equipment, and air contamination control are discussed. Various polymer materials are assessed from a toxicological point of view. The hygienic aspects of human vital activity, the methods of biological waste material disposal, and permissible concentrations of air contaminants are also considered. V. Z.

A68-39209 #
STATISTICAL TREATMENT OF PILOT-OPINIONS ON FLYING QUALITIES.
J. Gedeon (Budapest, Technical University, Chair for Aeronautics, Budapest, Hungary).
International Council of the Aeronautical Sciences, Congress, 6th, Munich, West Germany, Sept. 9-13, 1968, Paper 68-17. 8 p. 6 refs.

Results of a public opinion research conducted with numerous experienced pilots to check the reliability of pilot opinions on flying qualities of aircraft. Pilots frequently and regularly give different ratings, thus the validity of personal opinions can only be assumed for extreme cases. As pilot ratings given independently and in sufficient numbers are showing fairly regular distribution, their means may be counted upon as giving a fair qualification on flying characteristics. R.M.

A68-39267 *
FUCOSTEROL REDUCTION TO CLIONASTEROL IN VIVO BY CHLORELLA ELLIPSOIDEA.
Glenn W. Patterson and Edward P. Karlander (Maryland, University, Dept. of Botany, College Park, Md.).
Plant Physiology, vol. 42, Nov. 1967, p. 1651, 1652.
Grants No. NsG-70; No. NsG-21-002-003.

Description of pathways of sterol biosynthesis in Chlorella ellipsoidea. In order to determine the fate of fucosterol in the plant, C. ellipsoidea was grown autotrophically in the light for one week in the presence of 0.61 mg of fucosterol. The obtained data show that fucosterol is efficiently converted to clionasterol, but that the other C. ellipsoidea sterols are not synthesized from fucosterol. This result is the first evidence for the existence of this last step in the biosynthesis of plant sterols with a completely saturated side chain. R.M.

A68-39268 *
THE EFFECT OF WEIGHTLESSNESS ON THE DIVIDING EGG OF RANA PIPIENS.
Richard S. Young (NASA, Ames Research Center, Exobiology Div., Biochemical Evolution Branch and Cellular Biology Branch and Life Detection Branch, Moffett Field, Calif.) and John W. Tremor (NASA, Ames Research Center, Moffett Field, Calif.).
BioScience, vol. 18, no. 6, 1968, p. 609-615. 14 refs.

Study of the effect of weightlessness on the ability of the fertilized egg of the common American grass frog to divide, differentiate, and develop normally. Eggs, fertilized in advance and in the two-cell stage, were sent into orbit aboard Biosatellite 2. Although development of the embryo on earth is often affected by inversion, mostly through duplications, no abnormal deviations were observed after two days in space. The original experiment had called for exposure in the early cleavage stage, it being the most sensitive stage, but a launch delay prevented this. P.G.M.

A68-39325 *
SOME EXCRETORY PRODUCTS OF CHLORELLA PYRENOIDOSA.
H. C. Smith, H. E. Brown (Technology, Inc., San Antonio, Tex.), J. E. Moyer, and C. H. Ward (USAF, Systems Command, Aerospace Medical Div., School of Aerospace Medicine, Brooks AFB, Tex.).
IN: DEVELOPMENTS IN INDUSTRIAL MICROBIOLOGY. VOLUME 9. Washington, D.C., American Institute of Biological Sciences, 1968, p. 355-362. 14 refs.
NASA Contracts No. R-99; No. R-44-014-006.

Chlorella pyrenoidosa TX71105 was grown in autotrophic axenic culture in a modified Knop's medium. Culture filtrates were divided into two fractions based on ability to pass through a semipermeable membrane and, hence, were designated as dialyzable or nondialyzable. Organic acids identified in the dialyzable fraction were fumaric acid, lactic acid, glycolic acid, oxalic acid, pyruvic acid, α-ketoglutaric acid, oxalacetic acid, ascorbic acid, gluconic acid, and galacturonic acid. Ninhydrin-positive amino compounds present in the dialyzable fraction were cysteic acid, aspartic acid, threonine, serine, glutamine, glutamic acid, proline, glycine, alanine, cystine, valine, isoleucine, leucine, tyrosine, phenylalanine, ornithine, lysine, 3-methylhistidine, and histidine. Ammonia was also found in the dialyzable fraction. Nucleic acids were detected in the undialyzed culture filtrate. Polysaccharides and short peptides were found in the nondialyzable fraction, but were not further identified. (Author)

A68-39326 *
PULSED HIGH-INTENSITY ROENTGEN RAYS - INACTIVATION OF HUMAN CELLS CULTURED IN VITRO AND LIMITATIONS ON USEFULNESS IN RADIOTHERAPY.
Paul Todd, H. Saul Winchell, José M. Feola, and Gary E. Jones (California, University, Lawrence Radiation Laboratory, Donner Laboratory of Medical Physics and Biophysics, Berkeley, Calif.).
Acta Radiologica - Therapy, Physics, Biology, vol. 7, Feb. 1968, p. 22-26. 9 refs.
AEC-supported research; NASA Contracts No. R-104(2); No. R-09-019-900.

Experimental investigation of dose dependency of radiation-induced inhibition of colony formation by cultured human cells under aerated and anoxic conditions. Pulsed 10 MV X rays administered at dose rates of 10^{11} to 10^{12} rad/sec and in the total dose range of 200 to 1050 rad/pulse did not differ significantly from ^{60}Co gamma rays in their ability to inactivate aerated cultural human cells. It is estimated that a total dose of 260,000 rad delivered at dose rates greater than 10^8 rad/sec is necessary to eliminate the oxygen effect in aerated cells, and that at dose rates greater than 10^8 rad/sec the partial pressure of oxygen in tissue would have to be reduced to less than about 1.1 mm Hg prior to irradiation to eliminate the oxygen effect. M.M.

A68-39327 *
EGOCENTRIC LOCALIZATION OF THE VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE-DEFECTIVE OBSERVERS AS A FUNCTION OF HEAD AND BODY TILT.
Brant Clark and Ashton Graybiel (San Jose State College, San Jose, Calif.; U.S. Naval Aviation Medical Center, Aerospace Medical Institute, Pensacola, Fla.).
Perception and Psychophysics, vol. 2, no. 12, 1967, p. 609-611. 9 refs.
NASA Contracts No. R-93; No. R-10-009-004.

Perception of the visual horizontal by observers in five different combinations of head and body position was studied to determine the effect of 20° body tilts. Both normal and labyrinthine-defective observers made five settings to the visual horizontal for each condition using a goggle device which presented a collimated line of light to the right eye while the other eye was covered. The results showed no significant constant errors in the settings by either group, and it is suggested that the absence of the E-phenomenon (the apparent displacement of a vertical, luminous line in darkness in the direction of small bodily tilts from the vertical) was due primarily to adequate contact cues and kinesthetic cues. The data also make it clear that vestibular information is not required for veridical perception of the visual horizontal under these experimental conditions. (Author)

A68-39328 *
CALORIGENESIS OF BROWN ADIPOSE TISSUE IN COLD-EXPOSED RATS.
Yusuke Imai, Robert Emrie Smith (California, University, School of Veterinary Medicine, Dept. of Physiological Sciences, Davis, Calif.), and Barbara A. Horwitz.
Society for Experimental Biology and Medicine, Proceedings, vol. 127, 1968, p. 717-719. 12 refs.
PHS Grant No. 7 R01-HD-03268-01; Grants No. NGR-05-004-035; No. NsG-721; No. NsG-050-07-044.

Evaluation of brown fat thermogenesis in vivo in relation to the total heat production of rats during acute exposure to cold. Six adult rats, exposed to 5°C for 3 to 4 weeks and returned to a 26°C room for 10 to 14 days, were acutely prepared by insertion of thermocouples to measure temperatures of the colon, the interscapular brown fat, the arterial and venous blood perfusing the interscapular pad, and the inner and outer surfaces of the skin overlying the pad. From the temperature changes observed when the rats were re-exposed to cold, the heat produced by the interscapular pad was calculated and extrapolated to that of the total brown fat. A com-

parison of these values with the concurrently measured total caloric output indicated that during cold stress the intrinsic metabolism of brown adipose tissue accounted for 8.2% of the total heat production. M.M.

A68-39680
BRITISH INTERPLANETARY SOCIETY, INTERNATIONAL SUMMER SCHOOL ON BIOLOGY IN SPACE, CAMBRIDGE, ENGLAND, JULY 1967, PROCEEDINGS.
British Interplanetary Society, Journal, vol. 21, Sept. 1968. 114 p.

CONTENTS:

VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS. James A. M. Howe and Richard L. Gregory (Edinburgh, University, Edinburgh, Scotland), p. 209-221. 5 refs. [See A68-39681 20-05]

ISOLATION, CONFINEMENT, AND SENSORY DEPRIVATION. Peter Suedfeld (Rutgers University, New Brunswick, N.J.), p. 222-231. 25 refs. [See A68-39682 20-04]

THE PSYCHOLOGY OF SPACE FLIGHT AND CENTRIFUGE TRAINING. Randall M. Chambers (U.S. Naval Material Command, Johnsville, Pa.), p. 232-273. 60 refs. [See A68-39683 20-05]

ORBITAL SPACE STATIONS. Donald R. Ekberg (General Electric Co., Philadelphia, Pa.), p. 274-294. 11 refs. [See A68-39684 20-05]

COACERVATE SYSTEMS AND LIFE. Vlastimil Liebl and Jitka Lieblová (Czechoslovak Academy of Sciences, Prague, Czechoslovakia), p. 295-312. 116 refs. [See A68-39685 20-04]

A68-39681 #
VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS.
James A. M. Howe and Richard L. Gregory (Edinburgh, University, Dept. of Machine Intelligence and Perception, Bionics Research Laboratory, Edinburgh, Scotland).
(British Interplanetary Society, International Summer School on Biology in Space, Cambridge, England, July 1967.)
British Interplanetary Society, Journal, vol. 21, Sept. 1968, p. 209-221. 5 refs.

Discussion of visual perception on occasions when the limits of the visual system are being reached and surpassed, in situations in which the making of a correct decision can be critical for survival. Measurements of visual constancy during accelerated observer movement, and during movement of the observer at constant velocity, show that the problems associated with the reliable working of the visual system under the environmental conditions of space are formidable. F.R.L.

A68-39682 #
ISOLATION, CONFINEMENT, AND SENSORY DEPRIVATION.
Peter Suedfeld (Rutgers University, New Brunswick, N.J.).
(British Interplanetary Society, International Summer School on Biology in Space, Cambridge, England, July 1967.)
British Interplanetary Society, Journal, vol. 21, Sept. 1968, p. 222-231. 25 refs.

Consideration of the effects of sensory monotony, isolation, and confinement on man during extended space flights. A theoretical approach to determine the relevance of these factors is the U-curve: performance is optimal at moderate levels of motivation and deteriorates with low levels and high levels. Interpersonal relationships and task performance are discussed. Application of the concept of arousal both to interpersonal relations and to task performance in space can point to appropriate selection, training, and spacecraft design features. F.R.L.

A68-39683 #
THE PSYCHOLOGY OF SPACE FLIGHT AND CENTRIFUGE TRAINING.
Randall M. Chambers (U.S. Naval Material Command, Naval Air Development Center, Aerospace Medical Research Dept., Johnsville, Pa.).
(British Interplanetary Society, International Summer School on Biology in Space, Cambridge, England, July 1967.)
British Interplanetary Society, Journal, vol. 21, Sept. 1968, p. 232-273. 60 refs.

Systematic review of some psychological aspects of space flight. Problems involved in improving the reliability of man for serving as a functional component within manned space systems are presented. Major attention is given to the psychological aspects of acceleration training and conditioning. An attempt is made to systematize 23 acceleration training principles which encompass the primary areas of psychology as it relates to launch and reentry acceleration stress F.R.L.

A68-39684 #
ORBITAL SPACE STATIONS.
Donald R. Ekberg (General Electric Co., Aerospace Group, Missile and Space Div., Philadelphia, Pa.).
(British Interplanetary Society, International Summer School on Biology in Space, Cambridge, England, July 1967.)
British Interplanetary Society, Journal, vol. 21, Sept. 1968, p. 274-294. 11 refs.

Discussion of the experiments that may be performed in an earth-orbiting vehicle to study the space environment and its effects on terrestrial life. Some of the pertinent biomedical information now available, as determined from various U.S. and USSR orbital flights, is reviewed. Some possible configurations of an orbiting space laboratory are considered. F.R.L.

A68-39685 #
COACERVATE SYSTEMS AND LIFE.
Vlastimil Liebl and Jitka Lieblová (Czechoslovak Academy of Sciences, Institute of Microbiology, Prague, Czechoslovakia).
(British Interplanetary Society, International Summer School on Biology in Space, Cambridge, England, July 1967.)
British Interplanetary Society, Journal, vol. 21, Sept. 1968, p. 295-312. 116 refs.

Discussion of a general scheme for the basic evolutionary stages from molecules to cells pertinent to the origin of life on the earth or in the universe according to the ideas of various authors. It is considered that during the morphological evolution of living matter the mutually dependent evolution of more and more complicated biochemical and energetic metabolisms took place along with the molecular-biological evolution of macromolecules and biological structures. Most important were the evolution and mutations of basic genetic materials which directed many evolutionary processes. The changes also influence the informational structures of nucleic acids, probably by some feedback mechanism. F.R.L.

A68-39959 *
THE PERCEPTION OF SIZE IN A DISTORTED ROOM.
Walter C. Gogel (California, University, Dept. of Psychology, Santa Barbara, Calif.) and Donald H. Mershon (California, University, Santa Barbara, Calif.).
Perception and Psychophysics, vol. 4, no. 1, 1968, p. 26-28. 11 refs.
Grant No. NGR-05-010-010.

The study described was concerned with determining the factors important in the size illusion occurring with respect to extraneous objects introduced into an Ames' monocular distorted room. It was asserted that the distortion in the room was unnecessary in order for the size illusion to be present. A rectangular room plus the extraneous objects produces the same stimulus conditions found in the Ames' room and, hence, should produce the same illusion in perceived size. In an experiment using a rectangular room, 24 observers judged the size and distance of objects at the same or different distances behind the windows. As in the case of the Ames' room it was found that the objects of physically equal size were perceived to be in the plane of the windows with the more distant objects appearing to have the smaller size. These results are explained in terms of the action of the equidistance tendency making the objects appear at the distance of the windows and the concept that objects in the same apparent fronto-parallel plane must have equal values of perceived size per unit of retinal size. (Author)

LC ENTRIES

A68-81811
PATHOLOGY OF VESTIBULAR DISORDERS VERTIGO OF PERIPHERAL ORIGIN: HISTOPATHOLOGY.
John R. Lindsay (Chicago, U., Med. School, Dept. of Otolaryngol., Ill.).
Annals of Otology Rhinology and Laryngology, vol. 77, Apr. 1968, p. 203–209. 8 refs.

Vertigo which has not been associated with a known systemic disease or with a terminal illness usually subsides or is forgotten and its histopathological basis remains undetermined. Vertigo of peripheral origin can be divided into three principal groups for purposes of demonstration and discussion of histopathology. These are episodic vertigo, postural vertigo, and vertigo following total loss of paralysis of one or both vestibular labyrinths. The histopathological basis for episodic vertigo of peripheral origin is illustrated in Meniére's disease or idiopathic hydrops of the labyrinth and in labyrinthine fistula, for which several causes are known. The histopathological basis for postural vertigo of peripheral origin has been demonstrated in the human in few instances to date but has been produced in experimental animals. The histopathological basis for total loss of vestibular function in one or both ears is known in many instances, but in some it has yet to be determined.

A68-81812
NEUROLOGICAL ASPECTS OF THE DIFFERENTIAL DIAGNOSIS OF VERTIGO.
Alfred D. Weiss (Mass. Eye and Ear Infirmary, Boston).
Annals of Otology Rhinology and Laryngology, vol. 77, Apr. 1968, p. 216–221.

The diagnosis of neurological disease requires neurological findings in addition to the complaint of vertigo. A careful history and examination will often provide these. In some cases, the diagnosis is not evident at the first examination. It is crucial that such patients be followed periodically until the diagnosis becomes clear.

A68-81813
MUTAGENIC ACTION OF PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON THE DROSOPHILA MELANOGASTER [SULL'AZIONE MUTAGENA DELLO PSORAELENE IRRADIATO CON LUCE ULTRAVIOLETTA IN DROSOPHILA MELANOGASTER].
Benedetto Nicoletti and Giovanni Trippa.
Atti della Accademia Nazionale dei Lincei, vol. 43, Sep.–Oct. 1967, p. 259–263. 10 refs. In Italian.

Psoralene, a photosynthetic furocoumarin, was tested for mutagenic action on *Drosophila* males, by feeding or injecting with the substance and subsequently irradiated with long wave ultraviolet (UV) light, λ3655 Å. The treated spermatozoa bearing a yw marked X chromosome were tested with the M-5 method for sex linked recessive lethals. The experiments showed that ingested psoralene was mutagenic with UV irradiation, and to a much smaller extent when not irradiated. The F_3 results showed that ingested psoralene could also induce sex linked lethal mosaics. No conclusive evidence for similar mutagenic action of injected psoralene could be reached. Analysis of the salivary chromosome heterozygous female gametes for X chromosomes bearing psoralene induced lethals revealed no evident structural rearrangement.

A68-81814
A SUBMINIATURE CRYSTAL-CONTROLLED BIOLOGICAL TRANSMITTER.
L. Kavanagh (Huntingdon Res. Centre, Great Britain).
World Medical Electronics, vol. 6, May 1968 p. 108–111.

A subminiature crystal controlled biological transmitter was described, and its performance and applications were discussed. The use of this device for medical telemetry was emphasized.

A68-81815
BREAKTHROUGH IN ARMOR.
Robert F. Rolston, Edward Bodine, and Joseph Dunleavy (Battelle Mem. Inst., Columbus, Ohio).
Space/Aeronautics, vol. 50, Jul. 1968, p. 55–63.

The problem of providing flying personnel with protective armor against bullets is discussed. Metal armor is not entirely effective, and in some cases is actually undesirable because of its weight, lack of maneuverability by the wearer and lack of ventilation. The solution to the problem, according to recent investigation, seems to be a composite material (ceramic plate with a fiber-resin backup) for construction of armor. The particular battle situation involved must be considered in any attempt to design effective armor.

A68-81816
NOISE—AN INCREASING MILITARY PROBLEM.
R. H. Meyer
Military Medicine, vol. 133 Jul. 1968, p. 550–556. 15 refs.

Various aspects of noise as a military problem are described and discussed. Included are the following: (1) effects of noise (embracing hearing loss, both temporary and permanent; interference with orientation and co-ordination; interference with communication; discomfort, pain and damage to the delicate inner ear tissues; fatigue, loss of sleep, psychosomatic and psychiatric symptoms, etc.; and long-term cumulative impairment of physiological brain functions); (2) individual susceptibility to noise; (3) methods of hearing measurements; (4) army noises; and (5) significance of hearing loss; and ear protection.

A68-81817
ILLUSIONS AND SIZE-CONSTANCY.
Gerald H. Fisher (Newcastle upon Tyne, U., Great Britain).
American Journal of Psychology, vol. 81, Mar. 1968, p. 2–20. 28 refs.
Grants SRC B/H/139 and MOD 70/GEN/9617.

The theory which attempts to relate the phenomena of constancy with those of illusory spatial distortions is discussed. Predictions from the three aspects of the theory are submitted to experimental consideration. The need for postulation of principles other than those of Emmert's law and perspective is discussed. It is concluded that constancy is not the mechanism underlying the spatial distortions which define "the geometrical illusions".

A68-81818
REPRODUCTION AND RATIO-PRODUCTION OF BRIEF DURATION UNDER CONDITIONS OF SENSORY ISOLATION.

K. D. Marum (Vt., U., Burlington).
American Journal of Psychology, vol. 81, Mar. 1968, p. 21–26. 7 refs.

Perception of brief durations was examined under conditions of sensory isolation by means of water immersion. It was assumed that the effect of isolation is to slow down subjective time. Analyses were made of mean-stimulus value produced for each of the three experimental conditions: environment, temporal-duration, and technique of production. The results of the analyses were: (1) the main effect of environment (isolation vs. nonisolation) was not significant; (2) the effect of method (reproduction vs. fractionation vs. multiplication) was significant at the 0.01 level; and (3) the effect of duration was also significant at the 0.01 level. The results of this experiment make it clear that psychological magnitudes are to a considerable extent influenced by methods of obtaining produced durations, but are relatively uninfluenced by environmental conditions.

A68-81819
AN EVALUATION OF THREE THEORIES OF FIGURAL ORGANIZATION.

M. Glanzer, Thelma Taub, and R. Murphy (N. Y. U., New York City).
American Journal of Psychology, vol. 81, Mar. 1968, p. 53–66. 10 refs.
Contract DA-49-193-MD-2496.

The adequacy of three approaches to figural organization was evaluated: revised information-theory, size-of-subset hypothesis, and verbal-loop hypothesis. The experimental context in which they were evaluated was a paired-associates discrimination-learning task. The aspects evaluated were the differences in difficulty of individual patterns within a set of figures and over-all differences in difficulty of sets of figures. The findings indicate the following: (1) the revised information-theory as presently stated is ruled out; (2) the inferred-subset hypothesis can account for only part of the data on relative difficulty of individual patterns within sets of patterns and for only part of the data on relative difficulty of sets of patterns; (3) the verbal-loop hypothesis can account for the data on relative difficulty of individual patterns within sets of patterns. As presently stated, it cannot account for the data on relative difficulty of sets of patterns. There is, however, an indication of the way in which the hypothesis could be expanded to account for the relative difficulty of sets of figures. This is by the inclusion of a measure of confusability or overlap of vocabulary in the descriptions.

A68-81820
PERSPECTIVE DETERMINANTS OF VISUAL SIZE-CONSTANCY IN BINOCULAR AND MONOCULAR CATS.

Robert B. Freeman, Jr. (Pa. State U., University Park).
American Journal of Psychology, vol. 81, Mar. 1968, p. 67–73. 9 refs.
Grant NIMH MH 10,691.

Two experiments are reported on visual size-constancy in cats following dimensional discrimination-training. In Experiment I, a significant reduction in size-constancy occurred under binocular observation-conditions when false-perspective stripes had been painted into the alleys containing the *discriminanda*, in spite of the fact that the stripes were so painted as to generate over- rather than under-constancy. When the same subjects were trained and tested in Experiment II under monocular observation-conditions which eliminated both binocular parallax and motion-parallax as cues to distance, some of the size-constancy lost in Experiment I was regained. The results are interpreted as showing that cats are capable of accurate monocular size-judgments without motion-parallactic cues under conditions in which the natural perspective of the visual field is a dominant cue.

A68-81821
TACTILE-KINESTHETIC PERCEPTION OF LENGTH.

Mei-Fang Cheng (Pa., U., Philadelphia).
American Journal of Psychology, vol. 81, Mar. 1968, p. 74–82. 19 refs.

Subjects matched, by touch, a variable length and a constant length, with various spatial relations between the two stimuli. Three main effects were found: (1) radial extents are overestimated relative to tangential extents, regardless of the separation between the two extents; (2) of two tangential extents, the farther is underestimated relative to the nearer; and (3) equal radial extents are judged equal even when one is farther from the subject than the other. Since these findings differ from those in comparable experments on visual size-constancy and on the visual vertical-horizontal illusion, it may be concluded that tactile-kinesthetic perception has modality-specific characteristics which are different from those of visual perception. The results do not support theories which hold that perceptions in one modality are derived from or calibrated in terms of perceptions in another. Some general perceptual principles that apply to both modalities are, however, suggested.

A68-81822
THE EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON THE JUDGMENT OF VISUAL NUMBER.

Arthur L. Miller (S. Dak., U., Vermillion) and Robert A. Baker. (Fort Knox, Ky.)
American Journal of Psychology, vol. 81, Mar. 1968, p. 83–91. 14 refs. Army, Dept. supported research.

Eighty subjects observed 75 35-mm. slides containing small and large circles and small and large triangles. The set of slides contained five levels of numerosity consisting of 14, 23, 37, 60, and 98 objects and four levels of heterogeneity: (1) objects of only one kind, e.g., small circles; (2) objects of two kinds, e.g., small triangles and large circles; (3) objects of three kinds, e.g., small triangles, large triangles, small circles; and (4) objects of four kinds, e.g., small triangles, large triangles, small circles, and large circles. Half of the subjects made judgments of the total number of objects under instructions to "estimate" and half under instructions to "count". Data-analysis showed that the instructional set, levels of heterogeneity, and shape differences used in this study had no effect upon the subjects' judgment of number. There was, however, a significant effect from the variable of size. The subjects consistently overestimated the number of small objects and consistently underestimated the number of large objects.

A68-81823
THE SPATIAL SEPARATION OF TWO LIGHT-FLASHES AND THEIR PERCEIVED SEPARATION IN TIME.

Theodore E. Parks (Calif., U., Davis).
American Journal of Psychology, vol. 81, Mar. 1968, p. 92–98. 8 refs.

Human subjects were required to match two brief time intervals which were: (1) presented successively (using three, spatially distinct light-flashes, subjects asked to match the time between the second and third flashes with the time between the first and second flashes); and (2) presented simultaneously (again using three flashes, the subjects being required to match the time between the first and one of the others with the time between the first and the third). Under the former condition, but not the

latter, the temporal length of the interval which appeared to equal the standard interval varied inversely with the spatial distance between the flashes that delimited the former interval (the Kappa effect).

A68-81824
THE MEASUREMENT OF PERCEIVED SHAPE.
Peter K. Kaiser (Rochester, U., N. Y.).
American Journal of Psychology, vol. 81, Mar. 1968, p. 99–101. 9 refs.

An apparatus is described for use in investigations of shape at a slant requiring subjects to describe in some manner the shape or form of the object designated as the standard stimulus. With an ideal apparatus, the subject should be able to produce all shapes that are geometrically congruent with the shape of the standard as he perceives it. The congruency requirement would permit the subject to respond without constraint about a fixed dimension (e.g., fixed width of the apparatus), thus obviating the necessity of scaling up or down the size of the figure. The apparatus described here meets these specifications for squares, rectangles, trapezoids, triangles, and their projections. This apparatus has been used successfully in experiments designed to test the shape-slant invariance hypothesis.

A68-81825
EFFECT OF A NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY.
K. B. Knudsen, J. D. Welsh, R. S. Kronenberg, J. E. Vanderveen, and N. D. Heidelbaugh (USAF, Aerospace Med. Div., Wilford Hall USAF Hosp., Gastroenterol. Serv., Lackland AFB, Tex; Okla, U., Med. Center, Dept. of Med., Oklahoma City; and USAF School of Aerospace Med., Aerospace Med. Div., Brooks AFB, Tex.).
American Journal of Digestive Diseases, vol. 13, Jul. 1968, p. 593–597. 18 refs.
Grant NIH T1 AM-5179.

Total lactose abstinence for 42 days in seven subjects failed to induce a deficiency in intestinal lactase or clinical lactose intolerance. Therefore, dietary lactose content does not appear to be an important factor in determining the level of intestinal lactase in humans for this period of time.

A68-81826
GASTRIC PRESSURES RECORDED BY A TELEMETERING CAPSULE.
J. T. Silverstone, G. P. Smith, and A. J. Stunkard (Pa., U., School of Med., Depts. of Psychiat. and Physiol., Philadelphia).
American Journal of Digestive Diseases, vol. 13, Jul. 1968, p. 615–618. 10 refs.
Grant NIMH 3684-07 and Found. Fund for Res. in Psychiat. supported research.

The gastric pressures for four human subjects in the fasting state were recorded by a pressure-sensitive telemetering capsule alone and in combination with an open-tipped intragastric catheter. Pressure elevations recorded by the capsule were similar in frequency and duration to those obtained in this and other studies by an intragastric catheter, in contrast to a very low rate of pressure elevations reported in an earlier study.

A68-81827
EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS.
Daniel H. Mintz, Dorothea E. Hellman, and John J. Canary (Georgetown U., School of Med., Depts. of Med., Washington, D. C. and Pittsburgh, U., School of Med., Magee-Womens Hosp., Pa.).
Journal of Clinical Endocrinology and Metabolism, vol. 28, Mar. 1968, p. 399–411. 24 refs.
Grants NIAMD AMO 2935, NIAMD AMO 6496, NIAMD AMO 5481, NIAMD TIAM 5041, and NIH 5-MOIFR-00060.

The circadian rhythms in the concentration of calcium, phosphorus and creatinine in the serum and urine of control, hyperthyroid and hypothyroid subjects were compared during standard or around the clock liquid metabolic diets. No significant differences were noted in the urinary calcium rhythms between control and hyperthyroid subjects on either feeding regimen. In contrast to standard feedings, in which a higher rate of calcium excretion was present during the day, metabolic feedings reversed the timing of the excretory cycle so that nocturnal calcium excretion exceeded diurnal calcium excretion. The concentration of serum or urinary calcium, however, did not correlate with urinary phosphate excretion in control or hyperthyroid subjects on either feeding regimen. During standard feedings, hyperthyroidism exaggerated the circadian rhythms of urinary phosphorus excretion. In contrast, when individual hypothyroid patients were compared, no reproducible rhythm of serum or urinary phosphorus excretion emerged. Around the clock liquid metabolic feedings of hyperthyroid subjects blunted the amplitude of the cycle in serum phosphorus and urinary phosphorus and excretion so that their circadian variations were indistinguishable from similarly fed control subjects. In hypothyroid patients fed standard diets, the temporal variations in urinary phosphorus excretion were more highly correlated with serum phosphorus concentration and glomerular filtered phosphorus than in similarly fed hyperthyroid subjects. These data suggested that changes in the glomerular filtered load of phosphorus are sufficient to account for urinary phosphate variations in hypothyroid subjects; whereas an additional, more dominant renal tubular factor is necessary to account for urinary phosphate variations in hypothyroid subjects fed standard diets. The phosphodiuretic effects of i.v. T_3 were demonstrated to be temporally dependent, cyclic in nature, and apparently independent of parathyroid hormone. Therapy directed at establishing a euthyroid state was associated with a return to a normal circadian rhythm of phosphorus excretion in hypothyroid patients, and an elevation to the normal range in the decreased forenoon phosphate clearance in hyperthyroid patients. The data were interpreted to indicate that: (1) thyroid hormone is permissively necessary for the expression of a normal phosphaturic rhythm; (2) circulating levels of thyroid hormone influence the amplitude of the phosphaturic rhythm; and (3) the phosphodiuretic actions of i.v. T_3 depend upon the intrinsic circadian responsiveness of the renal tubule.

A68-81828
EXERCISE AND CARDIOVASCULAR CONDITIONING.
J. M. Altekruse (School of Aerospace Med., Brooks AFB, San Antonio, Tex.).
Journal of Occupational Medicine, vol. 10, Jun. 1968, p. 296–304. 34 refs.

In summary one cannot be absolutely certain whether an exercise program will afford preventive protection for a particular patient or population because the precise cause or causes of coronary heart disease (CHD) are not known. However, the results of recent studies suggest that exercise is of value. A well-controlled prospective epidemiologic study is needed to furnish the data for elucidation of the explicit relationships of exercise and risk factors to CHD and may in the process benefit tested individuals. Academic institutions, industry, and the military representing large cross-sections of social and demographic characteristics, can provide populations relatively stable in composition over time and stand to benefit through the increased production and work attendance and decreased incidence of accidents of healthier employees.

A68-81829
CIRCADIAN RHYTHMS.
Jose A. Martinez-O'ferrall.
Journal of Occupational Medicine, vol. 10, Jun. 1968, p. 305–315. 43 refs.

An attempt was made to present an over-all view of biologic cycles by summarizing selectively a small part of the literature on the theme. Superficial treatment of some subtopics was due partly to the vastness of the subject reviewed and partly to the need of further research in that particular area. To facilitate the understanding of rhythms illustrations showing relative rather than absolute changes were simplified. A discussion is presented of the application of principles to space flight and high speed aircraft flight when time factors are involved. The bibliography attached might be an effective starting point for interested students of the subject.

A68-81830
SPECIFIC ACTIVITY OF ^{24}NA IN RELATION TO MORTALITY OF RATS AS INDICATOR OF NEUTRON IRRADIATION-DOSES [SPECIFICKA AKTIVITA ^{24}NA VE VZTAHU K SMRTNOSTI KRYS JAKO INDIKATOR DAVKY OZARENI NEUTRONY].
Vladimîr Kofránek, Antonîn Kokeš, and Věra Hrašeová.
Pracovni Lekarstvi, vol. 20, May 1968, p. 142–145. 9 refs. In Czech.

The relative dependence of a neutron activation of natural sodium was estimated in relation to mortality of laboratory animals and irradiation doses; the values were presented graphically. Within the range of LD_{20}–100/30 the specific activity of ^{24}Na 1.53–2.95.10–4 ± 12% μcuries ^{24}Na/mg. ^{23}Na was estimated, with regard to changes of the neutron spectra for all the horizontal channels of the VVR-S reactor in Rež. By comparison of the results above a survey of the intensity of irradiation-doses in man may be achieved by activation of sodium in case of accidental irradiation by a high dose. By this method of the dosimetrical data, achieved by other types of measurement may be completed.

A68-81831
THE AUTONOMIC NERVOUS SYSTEM AND REGULATION OF BODY TEMPERATURE.
Allan Hemingway and William M. Price (Calif., U., Center for Health Sci., Dept. of Physiol., Los Angeles).
Anesthesiology, vol. 29, Jul.–Aug. 1968, p. 693–701. 55 refs.

The physiological processes involved in thermoregulation were presented and included: (1) shivering; (2) non-shivering thermogenesis; (3) cutaneous vaso-activity; (4) sweating; (5) piloerection; and (6) panting. A brief description was given of the basic physiology and anatomy of the sympathetic nervous system as it functions in temperature regulation. Sections on the six mechanisms listed above and the role of the sympathetic nervous system as defined in recent literature was presented.

A68-81832
THE AUTONOMIC NERVOUS SYSTEM AND INTERMEDIARY CARBOHYDRATE AND FAT METABOLISM.
Richard J. Havel (Calif., U., San Francisco Med. Center, Dept. of Med. and Cardiovascular Res. Inst., Los Angeles).
Anesthesiology, vol. 29, Jul.–Aug. 1968, p. 702–713. 54 refs.
Grant PHS HE-06285.

Carbohydrate and fat metabolism are discussed in relation to the autonomic nervous system. The sympathetic nervous system participates in an integrated neurohumoral response to stress which increases the supply of substrate for demands of oxidative metabolism. It appears to constitute the rapidly acting part of this response, later supported by similar effects of growth hormone and ACTH secreted by the pituitary. The mobilization of fat and inhibition of insulin secretion that result from increased sympathetic nervous activity serve to decrease use of carbohydrate in non-nervous tissues and to inhibit many anabolic processes. Potentially, excessive sympathetic activity may have deleterious effects which include hyperlipoproteinemia, increased tendency to thrombosis, inhibition of reparative processes, and unnecessary increase in certain oxidative reactions. Conversely, undue inhibition of sympathetic activity could impair metabolic processes by limiting the supply of substrate. The importance of counteracting effects of sympathetic nervous activity in pathologic states is not established, but attempts to increase the supply of glucose and insulin appear to be the most rational approach to treating certain acute illnesses.

A68-81833
PHARMACOLOGIC TOOLS IN AUTONOMIC NERVOUS SYSTEM RESEARCH.
Richard J. Wurtman and Michael J. Zigmond (Mass. Inst. of Technol., Dept. of Nutr. and Food Sci., Cambridge).
Anesthesiology, vol. 29, Jul.–Aug. 1968, p. 714–723. 72 refs.
NASA Grant NGR-22-009-272, Grants PHS AM-11237 and PHS AM-11709.

The various steps involved in the synthesis, storage, release and inactivation of norepinephrine, as well as the effects of drugs on these processes, were described.

A68-81834
THE ELECTRORETINOGRAM: ITS COMPONENTS AND THEIR ORIGINS.
Kenneth T. Brown (Calif., U., Med. Center, Dept. of Physiol., San Francisco).
Vision Research, vol. 8, Jun. 1968, p. 633–677. 87 refs.
Grant NINDB B-1903.

Three major neural components of the mammalian electroretinogram (ERG) have been demonstrated, including the late receptor potential (RP), b-wave, and d.c. component. These give an adequate explanation of all main features of the cone ERG. Main features of the rod ERG are accounted for by these same three components, plus the c-wave from the pigment epithelium. Different forms of the off-responses in cone and rod ERG are now readily understood from the rapid decay of the cone late RP, compared with the much slower decay of rod late RP. The generating cells have been identified for the late RP and c-wave, and b-wave and d.c. component have been localized to the inner nuclear layer, but the cell types which generate these latter components have not been identified. In addition to the major components, a number of minor components have been found which contribute to the detailed form of the ERG. Such components are still being discovered, and this process may continue. Among these, only the biphasic early RP and the directly-evoked triphasic response of the pigment epithelium cells have been positively identified with particular cell types. In addition to analyzing the ERG into components, and determining the cellular origin of each component, it is especially important to determine the role of each component in retinal functions. This further phase of ERG work is just beginning, since the components which are identified with both the receptors and cells of the pigment epithelium are now known.

A68-81835
EFFECTS OF CONTOUR SHARPNESS AND CHECK-SIZE ON VISUALLY EVOKED CORTICAL POTENTIALS.
M. Russell Harter (N. C., U., Greensboro) and C. T. White (U.S. Navy Electron. Lab., San Diego, Calif.).
Vision Research, vol. 8, Jun. 1968, p. 701–711. 12 refs.
Grant NSF GB-4067.

Averaged evoked cortical potentials were obtained from subjects as they viewed three checkerboard stimulus patterns (checks subtended 12, 20 and 46 min. visual angle) through a series of ophthalmic lenses (+6D to −6D). The checkerboards appeared

to vary in sharpness of focus under these conditions. Two components of the evoked cortical potential are very sensitive to the sharpness of focus and to the size of the checks in the visual display, a negative one with a latency of 90 to 100 msec. and a positive one with a latency of 180 to 200 msec. The amplitude of both components decreased as diopter settings were increased and the visual patterns became degraded. The late component was particularly sensitive to check-size under normal viewing conditions. The results suggest that it is possible to determine refractive error by observing the changes in these two components when a stimulus pattern is viewed through a series of lenses.

A68-81836
FLICKER AND THE STABILISED RETINAL IMAGE.
D. C. West (Reading, U., J. J. Thomson Phys. Lab., Great Britain).
Vision Research, vol. 8, Jun. 1968, p. 719–745. 50 refs.
Grant PHS NB-01233-07.

The visibility (V) of a flickering stabilized retinal image was measured over a range of frequencies. Certain parameters such as target size, position on the retina and color were varied. In most experiments the flicker waveform was sinusoidal. It was found that, for a given target, V reaches a maximum at a particular flicker frequency (peak frequency), and decreases for frequencies either side. For colors other than blue, flicker at any frequency in the range 0 to 20 c.p.s. increases V relative to the value for a steadily illuminated stabilized retinal image. For blue, a peak frequency is found, but on either side V may decrease below the steady light level. For large blue fields this does not occur. Peak frequency depends on target size and its position on the retina. As target size increases or as the distance from the fovea is increased, the peak frequency occurs at lower values. Variations of contrast, or sharpness of the target have no effect. The visibility depends in a nonlinear manner on the time average brightness, and the depth of modulation of the flickering stabilized image. When square flicker waveforms are used, multiple peaks occur in the V/frequency curves. The peaks occur at near multiples of one frequency, which depends on color. The results are generally consistent with the increase in size of retinal receptive fields as distance from the fovea increases. At the peak frequency a "pseudo-resonance" of the type postulated by previous workers is thought to occur, at which a maximum amount of information regarding the stimulus is transmitted by the optic nerve.

A68-81837
THRESHOLD VALUES AND THE PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION.
Gösta Ekman and Ulf Gustafsson (Stockholm, U., Psychol. Labs., Sweden).
Vision Research, vol. 8, Jun. 1968, p. 747–758. 26 refs.
Contract OAR AF 61(052)-878 and SCSSR 163/67 P.

Three experiments involving threshold measurement and brightness scaling were conducted with ten dark adapted subjects. It was demonstrated that: (1) the experimentally determined absolute threshold rises with the level of stimulation prevailing in the particular experiment; (2) threshold values extrapolated from the psychophysical brightness function agree closely with thresholds experimentally determined under proper conditions of stimulation; and (3) the psychophysical brightness function is approximately linear for low luminance levels, and this unexpected finding was supported by a re-analysis of data reported by a previous investigator.

A68-81838
WEIGHT CHANGES AFTER WHOLE BODY GAMMA RAY IRRADIATION IN THE SUBMAXILLARY GLAND OF UNPROTECTED AND CYSTAMINE-PROTECTED RATS AND AN ATTEMPT AT THEIR QUANTITATIVE INTERPRETATION.
L. Vodička and P. Petýrek (Purkyně Mil. Inst. of Med. Res. and Postgraduate Study, Hradec Králové, Czechoslovakia).
Folia Biologica, vol. 14, no. 2, 1968, p. 148–155. 12 refs.

After whole body irradiation with gamma rays, the relative weight of the submaxillary glands of unprotected female rats and animals protected with cystamine falls exponentially with mounting doses on the fourth day after irradiation. The drop in protected rats is significantly smaller, however. Histological changes in the salivary glands on the fourth day after irradiation with 500 and 750 r are not very marked (hyperemia, isolated microhemorrhages), while after a dose of 1,000 r they are pronounced (an increase in the number of cells with secretion granules, pathological changes in the nuclei of secretory cells). By the seventh day after irradiation with 700 r, the relative weight of the salivary glands in both groups returns to normal and by the 15th day it falls again. The wet and dry weight of the glands are affected equally by these weight changes. The possibility of utilizing these changes for the quantitative evaluation of the protective effect of radioprotective substances or of the degree of radiation injury is discussed.

A68-81839
UNITED STATES ARMY AVIATION MEDICINE IN THE REPUBLIC OF VIETNAM.
Frank S. Pettyjohn.
Military Medicine, vol. 133, Jun. 1968, p. 478–483.

The small unit Flight Surgeon is and will continue to be the keystone of the Aviation Medical support in the Republic of Vietnam. He is an intimate of the aviator circle. He is constantly aware of the clinical medical problems faced by each aviator, and applies the most up to data treatment and preventive measures. He is aware of the changes in their character due to fatigue, regardless of the subtlety. The Flight Surgeon must choose to treat the individual medically, by grounding and subsequent ventilation or by advising the commander to place the aviator on less hazardous missions for a short period. Above all, the Flight Surgeon must keep the commander fully apprised on the status of the health and welfare of his command to prevent the loss of the lives of aviators and combat troops. Continuing changes are being made to provide the Flight Surgeon with the necessary personnel and equipment to accomplish his mission. The proposed Battalion Consolidated Dispensary and the Aeromedical Detachment (AM) will satisfy these requirements. The future of U.S. Army aviation medicine rests in the young, motivated physician bearing the title Flight Surgeon. His efforts in the Republic of Vietnam to date have been superb. The U.S. Army helicopter and fixed wing aircraft have reached an operational level of the highest magnitude. The Flight Surgeons have guided the aviators to these heights by conserving the flight strength.

A68-81840
THE EFFECT OF STARVATION AND STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND THE METABOLISM OF [U-^{14}C]GLUCOSE IN LIVER FROM GROWING CHICKS.
Alan G. Goodridge (Kan., U., Med. Center, Dept. of Physiol., Kansas City).
Biochemical Journal, vol. 108, Jul. 1968, p. 667–673. 17 refs.
Grant ACS P-426.

The conversion of [U-^{14}C]glucose into carbon dioxide, cholesterol and fatty acids in liver slices and the activities of malic enzyme, citrate-cleavage enzyme, NADP-linked isocitrate dehydrogenase and hexose monophosphate-shunt dehydrogenases in the soluble fraction of homogenates of liver were measured in chicks that were starved or starved then fed. In newly hatched

chicks the incorporation of [U-^{14}C]glucose incorporation into fatty acids increased as the starved chicks grew older. Citrate-cleavage enzyme activity increased slowly even when the newly hatched chicks were unfed. On feeding, citrate-cleavage enzyme activity increased at a much faster rate. In normally fed 20-day-old chicks starvation decreased the incorporation of [U-^{14}C]glucose into all three end products and depressed the activities of malic enzyme and citrate-cleavage enzyme. Re-feeding increased all of these processes to normal or higher-than-normal levels. In both newly hatched and 20-day-old chicks starvation increased the activity of isocitrate dehydrogenase and feeding or re-feeding decreased it. Very little change in hexose monophosphate-shunt dehydrogenase activity was observed during the dietary manipulations. The results indicate that increased substrate delivery to the liver is the principal stimulus to the increased rate of glucose metabolism observed in newly hatched chicks. The results also suggest that changes in the activities of malic enzyme and citrate-cleavage enzyme are secondary to an increased flow of metabolites through the glucose-to-fatty acid pathway and that the dehydrogenases of the hexose monophosphate shunt play a minor role in NDPH production for fatty acid synthesis.

A68-81841
EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION.

James M. Phang, Arthur N. Kales, and Theodore J. Hahn (NIH, Natl. Cancer Inst., Metab. Branch, Bethesda, Md.).

Lancet, vol. 2, Jul. 13, 1968, p. 84–85. 7 refs.

Administration of milk to three normal adults in six divided doses during the day produced greater 24 hr. urinary calcium excretion than the same amount of milk given in a single daily dose. There were no significant differences in urinary excretion of phosphorus, creatinine, sodium, or uric acid, but urinary magnesium excretion was significantly increased in two of the subjects.

A68-81842
DEPENDENCE OF THE AMPLITUDE OF FUSIONAL CONVERGENCE MOVEMENTS ON THE VELOCITY OF THE ELICITING STIMULUS.

Elek Ludvigh and Pauline McKinnon (Wayne State U., School of Med., Kresge Eye Inst., Detroit, Mich.).

Investigative Ophthalmology, vol. 7, Jun. 1968, p. 347–352. 24 refs.
Grant NINDB B-3934.

Foveal stimuli were used to elicit fusional convergence movements of the left eye in five subjects with normal binocular vision. The amplitude of fusional convergence was measured by recording eye position. The eyes were light adapted, and the stimulus to the left eye was driven at angular velocities ranging from 1/8 to 6°/sec. Although large individual differences were found in the maximum amplitude of fusional convergence, this maximum was elicited in all subjects with velocities of less than 1°/sec. As the angular velocity of the stimulus increases, the amplitude of fusional convergence first rises abruptly and then descends. The range of approximately ten to one between the lower and upper velocity values which give rise to 75% maximum fusional convergence probably accounts for why the velocity of eliciting fusional convergence is not crucial in determining the clinical result.

A68-81843
A REVIEW OF THE EFFECTS OF SLEEP DEPRIVATION.

Richard P. Tucker (Mich., U., Dept. of Neurol., Ann Arbor).

University of Michigan Medical Center Journal, vol. 34, May–Jun., 1968, p. 161–164. 17 refs.

Many misperceptions, mostly visual, but also sensory and auditory, occur with sleep loss. Large numbers of normal subjects deprived of sleep for up to four or five days experienced these misperceptions, but only a few had psychotic experiences. Some patients seemed to have acute schizophrenic episodes secondary to sleep loss, generally transitory, but some with more lasting effects. Long deprivation, 10 to 11 days, seems invariably to produce true hallucinations. A five-day turning point has been reported after which disorientation becomes more frequent and prolonged, first as to time, then place, and finally person. Delusions occur often, usually paranoid. At night patients may seem delirious, but in the day schizophrenic. Interrogation of war prisoners often involves sleep loss as part of a total experience which may lead to a kind of psychosis. The understanding of the chemistry of sleep and its loss is still fragmentary. A review of published reports reveals striking differences between various studies, as well as some similarities. Certainly the expectations of the experimenters can influence the behavior of subjects. While nothing is proved, still it seems that in some persons, anxiety and depression causing insomnia can establish a viscious cycle of sleep loss and increasing anxiety which may culminate in a psychological state closely resembling an acute schizophrenic reaction.

A68-81844
HYDROXYPROLINE EXCRETION DURING STARVATION OF OBESE SUBJECTS.

Harold Brown, Alice Milner, James Kennedy, and Sylvia Delena (Baylor U., Coll. of Med., Dept. of Med., Methodist Hosp.; and Veterans Admin. Hosp., Houston, Tex.).

Metabolism, vol. 17, Apr. 1968, p. 345–351. 15 refs.
Grants NIH FR00134, NIH HE05435, and NIH AM-5063.

Hydroxyproline excretion was measured in 12 obese subjects during starvation. There was a consistent rise after the first week of starvation, and refeeding with low calorie, low hydroxyproline diets failed to affect the increased hydroxyproline excretion. Potassium supplementation in two subjects eating 300–600 calories caused a striking fall in hydroxyproline levels. Plasma growth hormone levels during fasting in two subjects were not elevated. It was concluded that the elevated hydroxyproline excretion during starvation and refeeding could arise from the collagenous supporting structures of fat and other tissues and that bone was not the major source since the excretion of calcium and pyrophosphate was not excessive.

A68-81845
EFFECT OF HIGH ALTITUDE (14,100 FT.) ON NITROGENOUS COMPONENTS OF HUMAN SERUM.

Bertwell K. Whitten, John P. Hannon, George J. Klain, and Kenneth S. K. Chinn (Fitzsimons Gen. Hosp., U.S. Army Med. Res. and Nutr. Lab., Physiol. Div., Denver, Colo.).

Metabolism, vol. 17, Apr. 1968, p. 360–365. 21 refs.

Serum free amino acids and nitrogenous metabolites were measured in eight male subjects exposed to a high altitude of 14,100 ft. for 14 days. The ratio of total essential amino acids to total non-essential amino acids was decreased at altitude. Glutamic acid increased and leucine, lysine, valine and threonine decreased significantly at altitude. The nitrogenous metabolites, taurine and urea were elevated at altitude. Serum water content increased slightly, i.e., about 1%, and therefore changes in the nitrogenous components of serum at altitude cannot be explained by a dehydration effect. Alterations in serum free amino acid and nitrogenous metabolite concentrations in serum of subjects of 14,100 ft. closely parallel changes in these serum components reported in subjects on protein deficient diets; however, protein intake at altitude was well above minimum requirements. This suggests that the changes in nitrogenous components of serum noted in eight male subjects exposed to a high altitude of 14,100 ft. are due to alterations in protein metabolism which affect protein utilization.

A68-81846
CHANGES IN BODY COMPOSITION DURING TREATMENT OF OBESITY BY INTERMITTENT STARVATION.
J. C. Birkenhäger, A. Haak, and J. G. Ackers (U. Hosp., Dept. of Endocrinol. and Diseases of Metab., Leiden and "Reactor Centrum Nederland", Petten, The Netherlands).
Metabolism, vol. 17, May 1968, p. 391–399. 16 refs.

Four obese individuals treated by intermittent complete starvation have been studied by means of balance techniques and (in three cases) Whole Body Counting of ^{40}K. Intermittent complete starvation caused a loss of potassium and nitrogen either in the same proportion as that of their concentrations in lean tissue or with an extra potassium depletion. Fat loss amounted to between 60 and 80% of the decrease in total body weight. The potassium losses estimated by Whole Body Counting and balance study agreed reasonably well.

A68-81847
THE RELATION OF BSP RETENTION DURING PROLONGED FASTS TO CHANGES IN PLASMA VOLUME.
Ernst J. Drenick (Veterans Admin. Center, Wadsworth Hosp. and Calif., U., School of Med., Los Angeles, Calif.).
Metabolism, vol. 17, 1968, p. 522–527. 10 refs.

Obese subjects who fasted or consumed very low calorie diets developed abnormal bromsulphalein (BSP) retention. Sodium loading during fasting tended to raise plasma volumes and effected an improvement in BSP clearance. Conversely, a sodium and water diuresis had the opposite effect. The fasting ketoacidosis seemed unrelated to the change in BSP levels. The phenomenon of the acute rise in BSP retention with fasing may thus be explained by a reduction in hepatic blood flow secondary to a fall in plasma volume and the prompt improvement with refeeding by the reverse mechanism. Parenchymal liver damage need not be invoked as a cause of high BSP levels. These findings suggest that transiently abnormal BSP levels in some acute disease state may reflect the results of hypovolemia.

A68-81848
EFFECT OF STARVATION OF PLASMA IMMUNOREACTIVE INSULIN AND NON-SUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS.
Solomon S. Solomon, John W. Ensinck, and Robert H. Williams (Wash., U. Dept. of Med., Div. of Endocrinol., Seattle).
Metabolism, vol. 17, Jun. 1968, p. 528–534. 24 refs
Grants PHS AM-10215, PHS AM-2456, and PHS FR-37.

Plasma levels of immunoreactive insulin (IRI) and non-suppressible insulin-like activity (NSILA), measured during a pre-fast period (control), were higher in obese subjects than in normal weight individuals. After three days of starvation, a decline in IRI of approximately 70% was observed in both groups. The persistance of high IRI levels in the obese during fasting supports the view of insulin "resistance" in these subjects. In contrast, NSILA levels fell in normal subjects and tended to rise in the obese, indicating an alteration in the metabolism of NSILA in overweight humans.

A68-81849
ERYTHROCYTE MECHANISMS IN THE TRANSPORT OF CARBON DIOXIDE: AN OPTIONAL SCHEME.
A. P. Briggs (Ga., Med. Coll., Augusta).
Metabolism, vol. 17, Jul. 1968, p. 582–587. 14 refs.

According to an accepted view, the preponderance of metabolic carbon dioxide (as CO_2 or HCO_3) is required to make four excursions into or out of the interior of the erythrocyte before reaching the expired air. This apparent inconvenience is due to the conviction that the red cell carbonic anhydrase (CA) is confined to the fluid compartment of the interior. An optional scheme is suggested by the results of a recent report in which the enzyme was found to be in, or closely adherent to, the ghosts of lysed rabbit red blood cells. It is proposed that both production and decomposition of plasma HCO_3 occur in or on the cell cembrane thus obviating the necessity for excursions into central compartments. With this scheme, the chloride shift is a shift of $H+ — Cl^-$ rather than an exchange $Cl^- \leftrightarrow HCO_3^-$.

A68-81850
THE EFFECT OF STARVATION IN THE NORMAL DOG INCLUDING THE DALMATIAN COACH HOUND.
Guy Lemieux and Gerard E. Plante (Montreal, U., School of Med., Dept. of Med. and Hotel-Dieu Hosp., Renal Lab., Canada).
Metabolism, vol. 17, Jul. 1968, p. 620–630. 40 refs.
Med. Res. Council, Canada, Natl., Health and Welfare, Dept., and Can. Arthritis and Rheumatism Soc. supported research.

Metabolic balance studies were undertaken during a 12 day fasting period in six mongrel and four Dalmatian dogs. No evidence of ketosis could be demonstrated during this period. Plasma bicarbonate concentration remained normal. Mean urinary ammonia and titratable acid feii markedly so that net acid excretion dropped from 59 to 23 meq./day. Mean total urinary nitrogen excretion decreased from 7.2 to 3.3 gm./day during starvation. A modest rise in urinary pH (0.18 unit) was observed during fasting. No change in urinary or plasma uric acid values could be demonstrated in either mongrel or Dalmatian dogs. Serum phospholipids, cholesterol and triglycerides were not modified during starvation while nonesterified fatty acids rose from 740 to 1000 μeq./1. These data contrast markedly with those observed in human subjects who develop ketosis, increased urinary ammonia and decreased uric acid excretion during fasting. Canine resistance to ketosis during starvation could be related to more efficient utilization of mobilized lipids.

A68-81851
RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE.
Soren C. Sorensen and John W. Severinghaus (Calif., U., San Francisco Med. Center, Cardiovascular Res. Inst., San Francisco).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 211–216. 24 refs.
Federation of Am. Soc. for Exptl. Biol., Meeting, Chicago, Apr. 1967.
Grants PHS HE-06285, PHS 1-F05-TW-1062, and PHS 5-K6-HE-19,412.

At a constant Pa_{CO_2} normal for each subject, the increase in ventilation produced by lowering Pa_{CO_2} from 150 to 40 mm. Hg (ΔV_{40}) averaged 10.9 ± 8.7 l./m^2. per min. in 23 subjects born at sea level who had been living for two mo. to 12 yr. at 4,300 m. altitude. This is like the response of subjects born at sea level and remaining at sea level. Average Pa_{CO_2} of these 23 people while breathing air was 28.6 mm. Hg, comparable to that of acclimatized newcomers to high altitude, but lower than that of normal natives of this altitude (average 32.4 mm. Hg). If the five subjects who had lived at high altitude for more than three years, ΔV_{40} exceeded five l./m^2. per min., demonstrating that respiratory sensitivity to hypoxia is not always lost. On the other hand, in six of the 23 subjects, ΔV_{40} was less than five l./m^2. per min. after only two to 28 mo. at high altitude. It could not be determined whether such subjects were insensitive before ascent. ΔV_{40} averaged 3.9 ± 2.0 in nine normal high-altitude natives and 0.5 ± 4.4 in nine high-altitude natives with chronic mountain polycythemia (hematocrit > 70%).

A68-81852
IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE.
Soren C. Sorensen and John W. Severinghaus (Calif., U., San Francisco Med. Center, Cardiovascular Res. Inst., San Francisco).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 217–220. 18 refs.
Grants PHS HE-06285, PHS 1-F05-TW-1062, and PHS 5-K6-19,412.

The respiratory sensitivity to acute hypoxia (Pa_{O_2} = 40 mm. Hg) at constant PCO_2 was determined in 18 normal adults living at sea level. Of them, nine had been born at high altitude. The sensitivity, ΔV_{40} in l./m.^{2} per min., being the increase in ventilation produced by hypoxia, was 9.7 ± 7.0 in the subjects born at sea level and 0.4 ± 1.9 in the subjects born at high altitude, even though the latter group had lived at sea level for two to 16 yr. The resting P_{CO2} and the slope of the response curve at Pa_{O_2} > 150 mm. Hg were not significantly different in the two groups. No evidence of a return of sensitivity with time at sea level was seen. It is suggested that chronic hypoxia during the first two yr. of life irreversibly desensitizes the reflex response to acute hypoxia mediated by the peripheral chemoreceptors.

A68-81853
RESPIRATORY INSENSTIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT.
Soren C. Sorensen and John W. Severinghaus (Calif., U., San Francisco Med. Center, Cardiovascular Res. Inst., San Francisco).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 221–223. 9 refs.
Am. Physiol. Soc., Fall Meeting, Washington, D. C., Aug. 1967).
Grants PHS HE-06285, PHS 1-F05-TW-1062, and PHS 5-K6-HE-19,412.

Five patients over 15 yr. of age were studied more than one yr. after surgical correction of tetralogy of Steno Fallot. Their arterial P_{O_2} (Pa_{O_2}) while breathing air averaged 81 mm. Hg at the time of the study. The mean ventilatory response to a reduction of Pa_{O_2} from 150 to 40 mm. Hg at their normal Pa_{CO_2}, termed $\Delta V40$, was 0.5 l./m.^{2} per min. compared with a normal value of about 10 l./m.^{2} per min. The ratio of the slope of their CO_2 response curve at Pa_{O_2} = 40 mm. Hg to that at Pa_{O_2} = 150 mm. Hg averaged 1.1 as compared to a normal value of 2.7. The ventilatory response to CO_2 at Pa_{O_2} = 150 mm. Hg was normal averaging 1.2 l./m.^{2} per min. per mm. Hg. It is concluded that hypoxia during childhood permanently reduces the respiratory sensitivity to acute hypoxia. This finding helps rule out the possibility that the observed insensitivity to acute hypoxia in high-altitude natives is genetically determined.

A68-81854
COMPARISON OF ANOXIA WITH AND WITHOUT EBULLISM.
Richard W. Bancroft, Julian P. Cooke, and Stephen M. Cain (USAF School of Aerospace Med., Physiol. Branch, Brooks AFB, Tex.).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 230–237. 16 refs.

Water vapor and evolved gases play a unique role in the physiologic responses of animals exposed to a near vacuum. To identify and compare these responses with those induced by other types of anoxia at higher pressures, three groups of anesthetized dogs were rapidly exposed for two min. to one of three anoxic conditions: (1) 100% N_2 at ground-level pressures; (2) reduced pressure of 55 torr (55 mm. Hg abs.); and (3) two torr. Measurements included cardiovascular changes, arterial and mixed venous tensions of oxygen and carbon dioxide, hydrogen ion concentration, arterial lactate, pyruvate, and "excess" lactate. Responses to a near vacuum were more extreme than with anoxia per se. The nitrogen-exposed group showed the least severe responses, while the dogs that were decompressed to 55 torr were intermediate, in most respects being closely related to the nitrogen-breathing group. Most of the responses resulting from the near-vacuum exposures are associated with the vaporization and ebullition of body fluids and, therefore, can be related to a combination of anoxia, ineffective circulation, and apnea.

A68-81855
EXERCISE VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION.
Alan K. Pierce, David Luterman, Jan Loudermilk, Gunnar Blomqvist, and Robert L. Johnson, Jr. (Tex., U., Southwestern Med. School, Dept. of Internal Med., Pauline and Adolph Weinberger Cardiopulmonary Res. Lab., Dallas).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 249–254. 6 refs.
Grant PHS 825600 and Dallas Heart Assn. supported research.

Patterns of ventilation were recorded by a bag-box system in 11 patients with obstructive lung disease and six normal subjects at rest and exhausting exercise. A maximal inspiratory capacity was utilized to determine the segment of the lung volume used for ventilation. Inspiratory and expiratory flows were compared to flows over the same lung volume segment during a forced vital capacity (FVC). On the average, exercise expiratory flow for normal subjects was 63% of FVC flow over the same lung volume; exercise inspiratory flow was 40% of FVC flow. In contrast, the patients on the average exhaled their tidal volumes as rapidly at rest as they exhaled a similar volume during the FVC, and during exercise exhalation was 1.8 times faster than during the FVC; exercise inspiratory flow in patients was 61% of inspiratory flow during a FVC. The suprising ability of patients to achieve faster expiratory flows during exercise compared to the FVC probably relates to a moderation of expiratory pressure during exercise resulting in lesser amounts of airway collapse.

A68-81856
MECHANISM OF ENHANCEMENT OF ECCRINE SWEATING BY LOCALIZED HEATING.
Bruce A. MacIntyre, Robert W. Bullard, Mukul Banerjee, and Reynaldo Elizondo (Ind. U., Dept. of Anat. and Physiol., Bloomington).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 255–260. 21 refs.
Contract DA 49-007-MD-947 and Grant PHS GM 1233.

The mechanisms by which localized heating produces an increase in human eccrine sweating were studied utilizing resistance hygrometry recording techniques. When a small skin region is heated from 36 to 40° C. in a warm room during generalized eccrine sweating, a localized increase in sweating is produced. This increased sweat production can be blocked by the parasympatholytic agents like atropine and hemicholinium, by arterial occlusion, and by exposure in a cool room. Sweating activity depressed by arterial occulsion or hemicholinium could not be stimulated by local heating, but could be stimulated by pilocarpine, a parasympathomimetic drug. Physostigmine, an anticholinesterase drug, produced an augmented sweating response when local heating was applied. The hypothesis which best describes the experimental results obtained suggests that local heating acts by increasing the amount of neuroglandular transmitter substance released for each nerve impulse arriving at the preglandular nerve terminals.

A68-81857
CARDIOVASCULAR RESPONSES TO HOLDING AND CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS.

A. R. Lind and G. W. McNicol (Ind. U., Cardiopulmonary Lab., Wright Patterson AFB, Ohio and Natl. Coal Board, Physiol. Branch, Edinburgh, Great Britain).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 261–267. 12 refs.

Blood pressures and heart rates were measured when various weights were supported by hand and by a shoulder harness. The responses fell into the following two categories depending on the weight and the strength of the muscle group: (1) fatiguing responses where blood pressures and heart rates rose progressively throughout, until at fatigue the blood pressure was very high; and (2) nonfatiguing responses where after an initial moderate rise, the blood pressure and heart rate remained steady. The maximum load permitted for any muscle group should not produce a fatiguing response and this limit can be readily established by measurement of blood pressure. Hand carriage in excess of 10 kg. and shoulder carriage in excess of 80 kg. produced the fatiguing type of response in our subjects. The practical implications of these findings are discussed with special reference to stretcher carrying.

A68-81858
CARDIOVASCULAR CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN THE HEAT.
A. R. Lind, C. S. Leithead, and G. W. McNicol (Ind. U., Cardiopulmonary Lab., Wright Patterson AFB, Ohio and Natl. Coal Board, Physiol. Branch, Edinburgh, Great Britain).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 268–276. 17 refs.

Forty-three mines rescue personnel were tilted from the horizontal to the 70° head-up position, in a cool (18/20° C.) and then in a hot climate (45/35° C.). Twenty-one of these men were examined twice, making a total of 64 tilting episodes in the cool and a further 64 in the heat. No men fainted after tilting in the cool climate. Sixteen fainting episodes occured in the heat. A complex relationship was defined between fainting and the duration of exposure to the heat and rectal temperature at the time of tilting. No individual fainted unless his exposure exceeded 35 min. No individual fainted unless his rectal temperature exceeded 37.2° C. Fainting occurred at suprisingly low rectal temperatures and in the conditions in which faints were induced the incidence was 30% or more. Fainting, in this investigation, did not result from vascular pooling in the limb muscles, unlike fainting induced by emotion, hemorrhage, or by postural changes in cool climates.

A68-81859
COLD ACCLIMATION IN PUERTO RICANS.
Russel W. Newman (U.S. Army Res. Inst. of Environ. Med., Natick, Mass.). *Pharmacological Journal of Applied Physiology*, vol. 25, Sep. 1968, p. 277–282. 27 refs.

Two chamber cold acclimation studies were carried out on subjects of Puerto Rican origin. Each study consisted of six wk. of daily cold exposure (five-day work weeks) to 5° C. air for four hr. Sechenov minimum clothing. A standard, 60 min. cold challenge was administered before and after the six wk. exposure. One study was carried out in San Juan, Puerto Rico, using 12 civilian volunteers born and raised in the vicinity. The other at Natick, Massachusetts, used three military volunteers of Puerto Rican extraction but born, or at least reared, on the mainland. The island Puerto Rican group did not show the usual effect after six wk. of chamber cold exposure, i.e., markedly reduced shivering and warmer skin temperature; the continental Puerto Ricans did. Neither sample appeared to be atypical in thermoregulatory response to cold before the daily cold exposures. The original rationale for the study was that tropical subjects who had never known seasonal cold might respond differently to daily cold exposures. In this study they did, but uncontrolled differences in previous diet and the ambient environment and diet during the study phases may have influenced the result regardless of prior cold experience.

A68-81860
UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE.
J. Howland Auchincloss, Jr., Robert Gilbert, and Gerhard H. Baule (N. Y., State U., Upstate Med. Center, Dept. of Med., Syracuse and Syracuse U., Dept. of Elec. Eng., N. Y.).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 283–293. 6 refs.
Grants PHS H-2800, PHS FR0029-02, and PHS 1-K3-HE-19,414.

Three analytical circuits and an analogue computer were constructed which permitted the measurement of oxygen transfer at the alveolar-capillary membrane on a breath-to-breath basis (V_{O_2}) at exercise stresses (treadmill) which resulted in maximum values of were closely compared to values obtained with steady-state techniques. $V_{O_{2max}}$ obtained with another breath-to-breath circuit-limiting tidal volume was equal to $V_{O_{2max}}$ obtained during experiments of longer duration employing classical techniques in three subjects but slightly and significantly lower in two subjects. It was demonstrated that $V_{O_{2max}}$ could occur with submaximal heart rate. Adaptation to lower values of ventilation was achieved by tolerance to abnormal alveolar gas concentrations; refinements in circuitry minimize the need for such adaptation and favor the achievement and measurement of $V_{O_2 max}$.

A68-81861
RELEVANT PHASE CONDITIONS FOR PREDICTING OCCURRENCE OF DECOMPRESSION SICKNESS.
B. A. Hills (Brown U., Div. of Biol. and Med. Sci., Providence, R. I.).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 310–315. 24 refs.

An experiment was designed to determine whether phase equilibration or limited supersaturation is the relevant thermodynamic state of the critical tissue type to be considered in predicting the occurrence of decompression sickness. The total decompression times of five goats were titrated individually for direct surfacing from pressures equivalent to 10, 20, and 30 ft., apart from two of the animals which developed symptoms on reaching 10 ft. by the standard schedule employed. For the others it was found that time spent at the normal 10-ft. last stop of a conventional decompression format, based on the concept of limited supersaturation, can be employed more effectively if allotted to the 20-ft. stop. This would indicate that the gas phase is present during the popular Haldanian type of decompression so that the mathematical basis of such calculation methods would then be inconsistent with the physics of the system.

A68-81862
USE OF A MODIFIED THUNBERG BAROSPIRATOR TO DETERMINE AIRWAY RESISTANCE IN MAN.
Jules R. Schwaber and Jere Mead (Harvard School of Public Health, Dept. of Physiol., Boston, Mass.).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 328–332. 21 refs.
Grants PHS GM 08391 and PHS 2G-409.

Human subjects lay supine in a chamber with head and body compartments separated by a partition consisting of an adjustable flow resistance. Cyclic pressures (±80 cm. H_2O, 12 to 20 cycles/min.) applied to the head chamber produced flow through the partition to and from the body chamber and through the airways to and from the alveoli. When, by adjusting the

resistance of the partition, the time constants of these parallel pathways were made equal, cyclic movements of the lungs and chest wall ceased in voluntarily relaxed subjects, but adequate ventilation was maintained. In this circumstance the pressure in the body compartment equals alveolar pressure and airway resistance could be estimated from simultaneous recordings of airflow at the mouth and the difference in pressure between the mouth and the body compartment. The method has several practical limitations. Adequate immobilization was obtained in only five of 20 subjects. Furthermore, the values for airway resistance in the five subjects in whom measurements were possible were somewhat higher than anticipated. We present evidence that indicates that this reflects narrowing of airways, probably predominantly upper airways, during the period of immobilization.

A68-81863
PROBLEMS ASSOCIATED WITH THE DETERMINATION OF CARBON DIOXIDE BY INFRARED ABSORPTION.
Elizabeth C. B. Ammann and R. D. Galvin (Lockheed Missiles Space Co., Res. Labs., Palo Alto, Calif.).
Journal of Applied Physiology, vol. 25, Sep. 1968, p. 333–335. 9 refs.

The infrared absorption of carbon dioxide (0–46 mm. Hg) was measured in the presence of different diluent gases at a total pressure of 760 mm. Hg. The 4.3 μ band of CO_2 was found to be affected by foreign gases in the order He, $A < O_2 < N_2 < H_2$. This effect is large enough to be considered in an analysis of carbon dioxide consumption or production by biological organisms in different gas environments.

A68-81864
CHANGES IN THE LENSES OF FURNACE PLANT WORKERS [IZMENENIE KHRUSTALIKA U RABOCHIKH GORIACHIKH TSEKHOV].
R. G. Maslenitskaia.
Oftal'mologicheskii Zhurnal, vol. 22, no. 2, 1967, p. 128–130. In Russian.

A survey was conducted on workmen exposed to glare and heat in plants. Results showed cases of glass-blower's cataracts. Among 641 workers constantly exposed to infrared radiation 40 were found to have incipient cataracts of the senile type, and eight had cataracts at the anterior pole of the crystalline lens, 16 at the posterior pole. In most of the cases the changes occurred before the age of 40, especially after 10 to 20 yr. of work. In 190 workers seldom exposed to infrared radiation, there were eight cases of incipient senile cataracts, two cases at the anterior pole of the crystalline and two at the posterior. As in the first group changes in the crystalline occurred before the age of 40, and after 10 to 20 yr. of work. The use of special light-filtering blue or anti-glare glasses was recommended.

A68-81865
CATECHOLAMINES AND THEIR DETERMINATION IN URINE [KATEHOLAMINI I NJIHOVO ODREDIVANJE U MOKRACI].
Ante Rogulijić and Jovan Sivački.
Farmaceutski Glasnik, vol. 24, Mar. 1968, p. 101–116. 24 refs. In Yugoslavian.

Catecholamine structure, physical and chemical properties, physiology, and metabolism were outlined briefly. Methods generally used for quantitative determination of adrenaline and noradrenaline, including their advantages and disadvantages, are reviewed. One procedure, a modified Lund's THI-method, was described. Its specific character of determination was found very satisfactory. This method was suitable for the determination of adrenaline and noradrenaline in the urine and it also furnished data on the sympathetic nervous system and suprarenal gland activity.

A68-81866
NOVOCAINE POTENTIATION OF CHLORPROMAZINE TRANQUILIZING PROPERTIES [OB USILENII NOVOKAINOM TRAKVILIZIRUIUSHCHIKH SVOISTV AMINAZINA].
N. Z. Izgina.
Farmokologiia i Toksikologiia, vol. 31, Mar.–Apr. 1968, p. 142–145. 8 refs. In Russian.

Experimentation on animals brought certainty as to the novocain potentiation of neuroplegic properties common to chlorpromazine. Novocain heightens the anticonvulsant activity of chlorpromazine, strengthens its influence on the action of narcotics and hypnotics, increases motor activity, orientation reflex, catalepsy, muscular tone and provoked aggressiveness, as well as conditioned-reflex activity in rats and the electroencephalograms of rabbits. Potentiation of the chlorpromazine action appears as a result of the effect produced by novocain as such, and not by the products of its decomposition. It also cannot be attributed to the strengthening of adrenolytic properties of chlorpromazine.

A68-81867
COMPARATIVE ASSESSMENT OF THE INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON THE HIGHER NERVOUS ACTIVITY IN DOGS [SRAVNITEL'NAIA OTSENKA VLIIANIIA TRANKVILIZATOROV I NARKOTIKOV NA VYSSHUIU NERVNUIU DEIATEL'NOST' SOBAK].
N. S. Sofronov and V. K. Bolondinskii (USSR, Acad. of Sci., I. P. Pavlov Inst. of Physiol., Leningrad).
Farmokologiia i Toksikologiia, vol. 31, Mar.–Apr. 1968, p. 131–133. In Russian.

By eliciting food-salivatory conditioned reflexes in dogs it was demonstrated that tranquilizers (chlorpromazine and reserpine) along with narcotics (alcohol and sodium amytal) tend to attenuate the excitation process to abolish overstraining of intensity and mobility of nervous processes. Tranquilizers improve, while narcotics lower internal inhibition. Tranquilizers distinguish themselves from narcotics also by the nature of sedative action and profoundness of sleep. These distinctions explain a wider and adequate use of tranquilizers as psychotherapeutic agents as compared to narcotics.

A68-81868
SOME MORPHOPHYSIOLOGICAL CHANGES OF THE BRAIN IN THE PRESENCE OF CHLORPROMAZINE DURING CHRONIC EXPERIMENTS [NEKOTORYE MORFOFIZIOLOGICHESKIE IZMENENIIA GOLOVNOGO MOZGA PRI DEISTVII AMINAZINA V CHRONICHESKOM EKSPERIMENTE].
N. N. Karkishchenko (Rostov-on-the-Don Sci.-Res. Oncol. Inst., Morphol. Lab. and Rostov-on-the-Don Med. Inst., Dept. of Pharmacol., USSR).
Farmakologiia i Toksikologiia, vol. 31, Mar.–Apr. 1968, p. 156–159. In Russian.

A study of the effect produced by neuroplegic chlorpromazine (in a dose of 2.5 mg./kg.) was conducted on cats with brain implanted electrodes. The inhibitory action of the drug was noted to affect prodominantly the hypothalamic region. The excitability levels of different brain segments to the electrical stimulation, along with the electroencephalographic findings were considered as manifestations of the drug's action and were found to be in complete accord. Under the influence of chlorpromazine definite changes were observed to occur in microstructures of the brain.

A68-81869
MECHANISM OF VASOCONSTRICTIVE ACTION AND WAYS AND MEANS OF DEVELOPING HYPOXIA IN ANIMAL

TISSUES FOLLOWING MEXAMINE ADMINISTRATION [O MEKHANIZME SOSUDOSUZHIVAIUSHCHEGO DEISTVIIA I PUTIAKH SOZDANIIA GIPOKSII V TKANIIAKH U ZHIVOTNYKH PRI VVEDENII MEKSAMINA].

R. B. Strelkov, N. M. Kostygov, L. A. Parasochko, K. A. CHulkova, and E. N. Vorob'eva (USSR, Acad. of Med. Sci., Inst. of Exptl. Pathol. and Therapy, Sukhumi).

Farmakologiia i Toksikologiia, vol. 31, Mar.–Apr. 1968, p. 166–169. 7 refs. In Russian.

Vascular reaction to mexamine solution perfusion or its administration into the organism was investigated in experiments set up on isolated extremities of frogs and in isolated rabbit ears. In tests with an isolated rabbit's ear, parallel with counting of the outflowing fluid drops, changes in the level of oxygen tension in the rabbit's muscle tissue were registered polarographically. The pO_2 level in the muscle tissue of frogs was determined under surgical exclusion of different segments of the nervous system (destruction of hemispheres, decapitation and destruction of the spinal cord) after introduction of mexamine. The collected data suggest the presence of two (central and peripheral) constituents in the mechanism of vasoconstricting effects of mexamine and in its action on the level of oxygen tension in the animal tissues.

A68-81870

UTILIZATION OF ELECTRON-ACCEPTANT PROPERTIES OF HYDROQUININE IN PREVENTING AND TREATMENT OF OXYGEN DEFICIENCY [ISPOL'ZOVANIE ELEKTRONAKTSEPTORNYKH SVOISTV GIDROKHINONA DLIA PROFILAKTIKI I LECHENIIA KISLORODNOGO GOLODANIIA].

V. M. Vinogradov, L. V. Pastushenko, and S. F. Frolov (S. M. Kirov Mil.-Med. Acad., Dept. of Pharmacol., Leningrad, USSR).

Farmakologiia i Toksikologiia, vol. 31, Mar.–Apr. 1968, p. 218–221. 5 refs. In Russian.

Under consideration are issues that concern increased resistance of the organism to hypoxia of different origins achieved with the aid of hydroquinine. The use of the latter for prophylactic purposes contributes to lengthening the life span of mice at an altitude of 11 km. on the average by as much as eight times. Under the effect of the drug the bioelectric activity of the brain in cats exposed to a five min. long asphyxia becomes restored much quicker than in controls. With curvative application of hydroquinine the death rate among rats in the first 24 hr. after ligation of both carotid arteries comprises 20% (with destruction of 72% among controls). Intravenous injection of hydroquinine in a dose of 20 to 25 mg./kg. to cats at the height of disturbances provoked by administration of potassium cyanide speeds up normalization of the arterial pressure, respiration, cardiovascular responses to epinephrine, and substantially elevates tolerance of the poison.

A68-81871

TOXIC EFFECTS OF BENZOL IN ANIMALS OF DIFFERENT AGE [TOKSICHNOST' BENZOLA DLIA ZHIVOTNYKH RAZLICHNOGO VOZRASTA].

IU. A. Maniashin, M. F. Savchenkov, and G. V. Sidnev.

Farmakologiia i Toksikologiia, vol. 31, Mar.–Apr. 1968, p. 250–253, 9 refs. In Russian.

The toxic effects of benzol administered by inhalation or injection were studied on old, adult and young mice, rats and rabbits. Adult rats and mice showed the highest resistance to acute benzol poisoning, while the lowest was observed in young animals. Survival time, body weight dynamics, and organ weights were studied in rabbits during subacute benzol poisoning. The young animals presented the highest tolerance and the old the lowest. The highest degree of leukopenia with absolute neutropenia and lymphopenia was noted in the old, and the lowest in young animals. Study of bone marrow hematopoiesis in all age groups rabbits showed a marked decrease of granulocytes, maturation inhibition of white and red cells and increase of the amount of cells in the reticuloendothelial system; there was an increase of phenol excretion in the urine. The young rabbits showed a higher resistance to repeated administration of small doses of poison than to single high doses.

A68-81872

CHANGE IN EXTERNAL RESPIRATION, OXYGEN TRANSPORT FUNCTION OF THE BLOOD AND OXYGEN REGIME PARAMETERS OF YOUTHFUL ORGANISM AT HYPOXIC HYPOXIA [ZMINY ZOVNISHN'OHO DYKHANNIA, KYSEN'TRANSPORTNOI FUNKTSII KROVI I PARAMETRIV KYSNEVOHO REZHYMU IONATS'KOHO ORHANIZMU PRY HIPOKSYCHNII HIPOKSII].

V. S. Mishchenko (UkrSSR, Acad. of Sci., O. O. Bohomolits Inst. of Physiol., Div. of Age Physiol., Kiev).

Fiziologichnyi Zhurnal, vol. 14, Mar.–Apr. 1968, p. 211–221. 48 refs. In Ukrainian.

Pulmonary ventilation, frequency and depth of respiration, alveolar ventilation, oxygen volume of blood, oxygen saturation of arterial blood, heart rate, minute circulating blood volume, oxygen tension (PO_2) of inspired and alveolar air, arterial and venous blook, quantity of oxygen entering lungs and alveoli, oxygen transport by arterial and venous blood per unit of time and oxygen consumption during the same time were studied in 138 subjects, aged 12 to 16 yr. and in adults. Subjects were trained to various degrees in hypoxic conditions, breathing mixtures of various oxygen concentration. It was concluded that the training led to an increased development of the physiological systems involved in oxygen regulation, to an earlier rise in the efficiency and economy of oxygen and a more effective utilization of oxygen in both young and adult subjects. Alveolar ventilation was increased in relation to pulmonary capillary blood flow, lower PO_2 in alveolar air and arterial and venous blood.

A68-81873

BONE CHANGES IN CHRONIC INTOXICATION WITH AGENTS OF BENZOL SERIES [O KOSTNYKH IZMENENIIAKH PRI KHRONICHESKOI INTOKSIKATSII VESHCHESTVAMI BENZOL'NOGO RIADA].

A. V. Grinberg and T. V. Orlova (Leningrad Inst. of Labor Hyg. and Occupational Diseases, Moscow).

Vestnik Rentgenologii i Radiologii, vol. 43, Jan.–Feb. 1968, p. 60–67. 28 refs. In Russian.

To ascertain the state of the musculoskeletal system in chronic intoxication with the benzol series, a clinical and roentgenological study was made of 71 patients. In 29 persons X-ray study of the skeleton demonstrated the presence of extensive bone lesions in the form of structural reconstruction, a combination of osteoporosis and osteosclerosis, foci of ostenonecrosis and bone marrow calcifications with a preponderant localization at the site of active hemopoiesis, especially in distal metadiaphyses of the femoral bone and of the tibia. Vital bone marrow examination demonstrated that of 31 patients with disturbed hemopoiesis, bone marrow disturbances were accompanied by skeletal lesions in 26. Benzol orgin of bone lesions are also indicated by the presence of benzol in the bone marrow and blood. Roentgenological bone lesions are nonspecific and therefore benzol affection of the skeleton may be definitely diagnosed only after studying occupational anamnesis (prolonged contact with agents of the benzol series) and the clinical picture of the disease.

A68-81874
ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES [VLIIANIE STELAZINA NA POTREBLENIE KISLORODA I GLIKOLITICHESKUIU AKTIVNOST' TKANI GOLOVNOGO MOZGA].
S. P. Filippov and S. V. Zakharov (Yaroslavl' Med. Inst., Dept. of Biochem., USSR).
Zhurnal Nevropatologii i Psikhiatrii, vol. 68, no. 1, 1968, p. 103–106. 7 refs. In Russian.

The influence of stelazine on oxygen consumption and glycolytic activity was studied on white rats. Oxygen consumption and glycolytic intensity was estimated after one to three and six hr. after a single dose of stelazine and after five to ten and 15 days of a daily introduction of this medication. It was shown that stelazine in doses five mg./kg. does not influence the intensity of oxygen consumption and glycolytic activity in the brain tissues. In a prolonged use of the drug an elevation of lactic acid during the incubation of brain tissues with a solution of glucose was much less pronounced. This may suggest a possible inhibition in the enzyme system of glycolysis by stelazine. The oxygen consumption in this condition does not change.

A68-81875
CHANGES OF PYROCATECHOL AMINE CONTENT IN THE BRAIN AND ADRENALS OF RATS DURING CHRONIC INTRODUCTION OF AMINAZINE [IZMENENIE SODERZHANIIA PIROKATEKHINOVYKH AMINOV V MOZGU KRYS PRI KHRONICHESKOM VVEDENII AMINAZINA].
A. A. Shatalova and E. L. Shchelkunov (Bekhterev Leningrad Psychoneurol. Inst., Lab. of Psychopharmacol., USSR).
Zhurnal Nevropatologii i Psikhiatrii, vol. 68, no. 1, 1968, p. 106–111. 38 refs. In Russian.

Numerous literary communications point to a decrease in the reactivity and sympathetic tonus in schizophrenic patients, with a subsequent normalization in clinical improvement or remission. This may be attained by various methods including neuroleptical therapy. The catecholamine content in the brain stem and adrenals of rats was investigated during chronic use of aminazine. Aminazine was given daily in increasing doses from three to seven mg./kg. during four wk. The estimation of catecholamines was made 72 hr. after the last introduction of aminazine. These tests showed a significant increase of the brain noradrenaline content compared with control groups, which may reflect an intensified rate of noradrenaline synthesis. Such changes may be explained by adaptive-compensatory mechanisms increasing the fundamental level of the central adrenergic structures during prolonged application of neuroleptical drugs. The achieved data coincide with the affirmation made previously on the compensatory elevation of the tonus in the central adrenoreactive structures in chronic introduction of neuroleptics. This may be considered as principally similar to the physiological mechanisms of other effective forms of therapy.

A68-81876
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE [OSTRAIA POCHECHNAIA NEDOSTATOCHNOST' PRI OSTROM OTRAVLENII CHETYREKHKHLORISTYM UGLERODOM].
K. G. Abramovich, V. M. Makotchenko, V. P. Malinina-Putsenko, and V. F. Ol'shanskii (Khar'kov Sci.-Res. Inst. of Labor Hyg. and Occupational Diseases and Ukrainian Inst. of Advan. Training of Physicians, Dept. of Labor Hyg. and Occupational Diseases, Khar'kov, UkrSSR).
Terapevticheskii Arkhiv, vol. 38, Oct. 1966, p. 93–96. In Russian.

Three cases of acute intoxication with carbon tetrachloride under different conditions with recovery were studied. Along with predominating symptoms of acute renal insufficiency there were also signs of toxic liver lesions. They were, however, obscured by the more prominent renal symptons. Subsequent observations for two yr. showed complete restoration of kidney and liver functions.

A68-81877
PRACTICAL VALUE OF THE SEMI-QUANTITATIVE RAINSFORD-DAVIES TEST FOR THE DETERMINATION OF PHENOL IN THE URINE OF WORKERS EXPOSED TO BENZENE VAPOR [PRAKTICNA VRIJEDNOST SEMIKVANTITATIVNOG RAINSFORD-DAVIES TESTS ZA ODREDIVANJE FENOLA U URINU KOD EKSPOZICIJE PARAMA BENZENA]. for Med. Res. and Ind. Hyg., Zagreb).
L. Stilinovic, Edita Kersanc, S. Karlj, and A. Gliha (Yugoslav Acad. of Sci. and Arts, Inst. for Med. Res. and Ind. Hyg., Zagreb).
Arhiv za Higijenu Rada i Toksikologiju, vol. 18, no. 4, 1968, p. 341–345. 7 refs. In Yugoslavian.

The value of the semi-quantitative phenol test in relation to quantitative analysis was investigated in a group of 50 workers of a Zagreb pharmaceutical plant exposed to benzene vapor. The control group consisted of 20 workers of the same factory. The reaction of the test is based on the production of a blue color by phenol and 2, 6 dichloroquinone 4 chloroimide (the Gibbs reagent) in an alkaline medium (pH 10.15). The color intensity is in a linear proportion to the concentration of phenol in the urine and of benzene in the air, respectively. The results have shown that the semiquantitative determination of phenol in the relation to the quantitative one gives a very good insight into the collective and individual exposure to benzene vapor. The procedure is simple and quick, and for this reason of more practical value than other methods.

A68-81878
LEAD IN CEREBROSPINAL FLUID IN CLINICAL LEAD POISONING [OLOVO U LIKVORU KOD KLINICKOG SATURNIZMA].
Danica Prpić-Majić and T. Beritić (Yugoslav Acad. of Sci. and Arts, Inst. for Med. Res. and Ind. Hyg., Zagreb).
Arhiv za Higijenu Rada i Toksikologiju, vol. 18, no. 4, 1968, p. 347–354. 11 refs. In Yugoslavian.

The analysis of the cerebrospinal fluid lead concentration was performed in 43 patients exposed to lead oxide dust (Group I—15 patients), lead tetraethyl (Group III—15 patients), and using lead-galzed pottery (Group II—13 patients). A group of 10 persons with no known exposure to lead was examined in the same way and served as controls. The results have shown that on the average the fluid lead concentrations in the exposed persons were higher than in the control group. The concentrations ranged from 0-82 in Group I, from 0-104 in Group II, from 0-40 in Group III, and from 0-18 μg.Pb/100 ml.fluid in the control group. Although the cerebrospinal fluid lead concentrations were not always correlated with clinical and other signs of poisoning, it is worth noting that an increased fluid lead concentration in lead poisoning is possible.

A68-81879
TWO-DIMENSIONAL FIELD EFFECTS AND STATIC SLANT PERCEPTION.
E. Sture Eriksson (Uppsala, U., Dept. of Psychol., Sweden).
Scandinavian Journal of Psychology, vol. 9, no. 1, 1968, p. 19–32. 20 refs.

The model for two-dimensional field effects as developed in a previous article makes possible certain predictions concerning perceived shape which, taken together with the subjective slant principle, result in predictions of the perceived slant of a circle or a circle or a surface composed of circles. Data were obtained which agreed with these predictions, showing that the geometrical

shape slant invariance hypothesis is an inadequate model for depth perception. Some implications for gradient theory, Helmholtzian theories and Gestalt theory are discussed.

A68-81880
BINDING OF SULFHYDRYL REAGENTS TO NORMAL AND IRRADIATED LEUCOCYTE LYSOSOMES.
J. W. Harris (A.A.E.C. Res. Estab., Radiation Biol. Group, Lucas Heights, N.S.W., Australia).
Australian Journal of Experimental Biology and Medical Science, vol. 46, Apr. 1968, p. 209–217. 20 refs.
Australian Inst. of Nucl. Sci. and Eng. supported research.

The cytoplasmic granules (lysosomes) of leucocytes are highly reactive *in situ*, undergoing explosive rupture during phagocytosis, and relatively radiosensitive in the isolated state. The possibility that these properties might be related to membrane sulfhydryl groups was investigated by studying the binding of ^{203}Hg-labelled $HgCl_2$ and p-chloromercuribenzenesulfonate to granules isolated from rabbit peritoneal-exudate neutrophils. Leucocyte lysosomes had a maximum mercury-binding capacity of 1.92×10^{-7} moles/mg. protein (7.5 ± 10^{-17} moles per "average" granule). p-chloromercuribenzenesulfonate binding at 6.6×10^{-4}M was similar to this figure, but at lower concentrations binding of the mercurial was approx. 25% less than that of mercury. Binding of p-chloromercuribenzenesulfonate was influenced by the physical state of the preparations as well as by the ionic composition of the suspending medium. Isolated granules were highly sensitive to mercury and p-chloromercuribenzenesulfonate, undergoing rapid disruption upon incubation at 28° in the presence of low concentration of these agents. At high concentrations of mercury (but not of p-chloromercuribensenesulfonate) the granules became increasingly resistant to rupture. Lysosomes were more sensitive to gamma-radiation when they were irradiated in the presence of 10^{-5} M $HgCl_2$, indicating that sulfhydryl groups may be involved in the rupture of the granules by radiation.

A68-81881
THE EFFECT OF INSULIN ON THE EXTRACTION OF BLOOD SUGAR BY THE BRAIN OF DOGS GIVEN CHLORPROMAZINE AND RESERPINE [VLIIANIE INSULINA NA IZVLECHENIE SAKHARA KROVI MOZGOM SOBAK, POLUCHAVSHIKH AMINAZIN I REZERPIN].
S. G. Genes and P. M. Charnaia (Khar'kov Sci.-Res. Inst. of Endocrinol. and Hormone Chem., Lab. of Pathol. Physiol., UkrSSR).
Patologicheskaia Fiziologiia i Eksperimental'naia Terapiia, vol. 12, Jan.–Feb. 1968, p. 19–22. 16 refs. In Russian.

The effect of insulin on the extraction of blood sugar by the brain was studied on five healthy sinusotomized dogs against the background of chlorpromazine and reserpine action. The dogs were anesthetized with dosium amytal. Chlorpromazine, administered subcutaneously in a dose of 10 mg./kg. reduced the coefficient of blood sugar extraction by the brain in healthy dogs, anesthetized with sodium amytal; this coefficient was reduced even more after the administration of reserpine, one mg. for three days. In simultaneous administration of chlorpromazine and insulin (the latter was injected subcutaneously in a dose of 0.2 units/kg.) the coefficient of blood sugar extraction by the brain proved to rise markedly and remained unchanged in administration of insulin alone. In simultaneous administration of reserpine with insulin the mentioned coefficient also exhibited a marked rise. Thus, insulin intensified sugar transfer to the brain even against the background of chlorpormazine and reserpine action, which, as it is known, reduced the brain tissue permeability to glucose.

A68-81882
HEMODYNAMIC DISTURBANCES IN EXPERIMENTAL EMBOLISM OF THE PULMONARY ARTERY AGAINST THE BACKGROUND OF THE ACTION OF GANGLIOPLEGICS AND IN CONDITIONS OF HYPOTHERMIA [NARUSHENIIA GEMODINAMIKI PRI EKSPERIMENTAL'NOI EMBOLII LEGOCHNOI ARTERII NA FONE DEISTVIIA GANGLIOLITIKOV I V USLOVIIAKH GIPOTERMII].
L. I. Antonenko (Kiev Med. Inst., Central Sci.-Res. Lab. and Dept. of Pathol. Physiol., UkrSSR).
Patologicheskaia Fiziologiia i Eksperimental'naia Terapiia, vol. 12, Jan.–Feb. 1968, p. 37–42. 14 refs. In Russian.

Experiments were carried out on 27 dogs and 28 cats. With the aid of dilution of T-1824 stain a study was made of disturbances of the principal hemodynamic parameters in pulmonary emboly in conditions of hypothermia (at the body temperature of 28°C.) and against the background of hexonium administration (10 mg./kg.) Emboly of the pulmonary artery caused marked shifts of hemodynamic parameters; these shifts were especially marked in cats, which, unlike dogs, showed no hemodynamic normalization during the observation period (one hr.). Hypothermia and ganglionic block aggravated the hemodynamic disturbances and prevented their restoration.

A68-81883
BILE ACIDS EXCRETION IN RABBITS IN FUNCTIONAL EXERTION OF THE NERVOUS SYSTEM [EKSKRETSIIA ZHELCHNYKH KISLOT U KROLIKOV PRI FUNKTSIONAL'NOM NAPRIAZHENII NERVNOI SISTEMY].
G. P. Iroshnikova (Leningrad Pediat. Med. Inst., Dept. of Pathol. Physiol., USSR).
Patologicheskaia Fiziologiia i Eksperimental'naia Terapiia, vol. 12, Jan.–Feb. 1968, p. 67–72. 16 refs. In Russian.

A protective conditioned reflex to respiration inhibition was evolved, the conditioned stimulus being maintained by gaseous ammonium. Three cycles of prolonged exertion of the nervous system were carried out according to the following scheme: a month of intense activity rest. Three such cycles were repeated. The following phenomena were determined: blood cholesterol level and bile acid excretion in the excreta (Siperstein's and Watanabe's methods were applied). In prolonged functional exertion of the nervous system a marked increased of the bile acid excretion was noted in eight out of 15 rabbits; it rose with increased duration of the functional exertion. Although the excretion proved to fall during the rest period it failed to reach the initial values during a 32-day rest, being restored only in three to four months.

A68-81884
THE ROLE OF WATER AND SALT METABOLISM IN THE ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS [K VOPROSU O ROLI VODNO-SOLEVOGO OBMENA V ETIOLOGII I PATOGENEZE DEKOMPRESSIONNOI BOLEZNI].
V. I. Shostak and V. A. Aver'ianov (S. M. Kirov Mil.-Med. Acad. and S. O. Makarov Leningrad Higher Maritime Eng. School, Leningrad, USSR).
Patologicheskaia Fiziologiia i Eksperimental'naia Terapiia, vol. 12, Jan.–Feb. 1968, p. 80–81. 5 refs. In Russian.

Experiments were carried out on white mice to study the role of water and salt metabolism in decompression sickness. Results of the studies revealed the importance of the water-salt metabolism in the etiology and pathogenesis of decompression sickness. Endo-abdominal introduction of distilled water in mice, 90 min. before placing the animals in a pressure chamber, produced a sharp decrease in the rate of sickness in comparison with controls. The decrease in the sickness rate after introduction of the distilled water in the animals seemed to be related with a higher capacity of the body fluids and tissues to retain nitrogen in saturated conditions.

A68-81885
ELECTRICAL ACTIVITY RECORDED SIMULTANEOUSLY FROM THE SCALP AND DEEP STRUCTURES OF THE HUMAN BRAIN.
Mary A. B. Brazier (Calif., U., School of Med., Brain Res. Inst., Los Angeles).
Journal of Nervous and Mental Disease, vol. 147, Jul. 1968, p. 31–39. 18 refs.
Contract ONR NR 233(69), Grants NSF GP-6438, PHS 6-K6-NB-18,608, PHS NB 04773, PHS NB 02501, PHS NB-02808, and NIH FR 3.

The on going wave characteristics of the electroencephalogram (EEG) in deep structures and those at the scalp and possible relationship between them were investigated. In order to examine the EEG relationships with greater accuracy a computer program was used as basis for the detections of correlations in the EEG activity occurring at the same time in several recording sites. In the course of the study three conditions which might give a misleading impression of the relationships in the normal waking brain were found. One was the presence of electrical seizures in depth, which yielded more correlation than the normal state. The second was when the subject drifted off into sleep, where lower or no correlations were found. The third condition concerned the exact placement of electrodes not only on the scalp but in deep structures, and needed much further studies.

A68-81886
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS.
Adolfo Ley, José Maria Aragonés, José Maria Guitart, and Adolfo Ley, Jr. (Barcelona, U., Med. School, Neurosurg. Clin., Spain).
Journal of Nervous and Mental Disease, vol. 147, Jul. 1968, p. 91–100. 29 refs.

Chronic and subacute labyrinthine disorders may give rise to a misleading clinical picture, readily identified with the so-called Barré-Lieou or *late postconcussional syndromes* or "tension headache." The data collected from 508 cases studied between 1958 and 1964 is analyzed. The findings seem to confirm the senior author's views, published in 1944 and 1950, in which the importance of the aural lesion as a causative factor was stressed. Sharp boundaries between the above-mentioned condition and Ménier's disease or the positional nystagmus of Bárány cannot be drawn. The resulting chronic or subacute vestibular disturbance could be attributed to the uneven and progressive characteristics of the aural lesion and/or to a faculty compensatory mechanism of central origin. Contrary to what has been assumed by some authors, ischemic changes in the territory of the vertebral artery induced by the accompanying cervical arthritis do not seem to play a significant role in the causation of the vestibular symptoms.

A68-81887
NOISE TRAUMA BY FIRE ARMS IN THE ARMY [LES TRAUMATISMES SONORES PAR ARMES A FEU DANS L'ARMEE DE TERRE].
P. Pazat and P. Grateau.
Revue des Corps de Santé des Armees Terre mer Air, vol. 9, Apr. 1968, p. 213–230. In French.

An extensive survey on the pathology of noise trauma by fire arms and the resulting hearing deficiencies was presented. The investigation lasted 26 mo. and 230 records were compiled. The major noise trauma was categorized and analyzed. Comparison between the hearing deficiencies observed in the professional soldier and the draftee, the syndromes, frequency, and scale of injury were studied. Preventive and safety measures were discussed and the medicolegal problems involved were mentioned. The only solution to the problem seemed, for the present time, to be based on improved prophylaxis.

A68-81888
STUDY OF RADIATION RESISTANCE OF SOME ANIMALS. POSSIBLE APPLICATION IN RADIATION PROTECTION [ETUDE DE LA RADIO-RESISTANCE DE CERTAINS ANIMAUX. PERSPECTIVES AINSI OUVERTES EN RADIOPROTECTION].
P. Niaussat.
Revue des Corps de Sante des Armees Terre mer Air, vol. 9, Apr. 1968, p. 243–266. 36 refs. In French.

After a brief introduction on the effects of ionizing radiation on the living cells, the present state of knowledge on natural radiation resistance in different living organisms were reviewed. Some observations made during studies of the unusual resistance to radiation of certain arthropods living in arid regions, and the working hypotheses elaborated during the investigations to help analyze the causes of this resistance were reported. The resulting inferences on the radiation protection mechanisms based on the data obtained and the subsequent practical application in military medicine were presented.

A68-81889
MICROMORPHOLOGIC CHANGES IN FIBERS OF SKELETAL MUSCLES UNDER WORKING LOAD IN ALBINO RAT [MIKROMORFOLOGICHESKIE IZMENENIIA V VOLOKNAKH SKELETNYKH MYSHTS BELYKH KRYS PRI RABOCHEI NAGRUZKE].
E. S. IAkovleva (I. P. Pavlov First Leningrad Med. Inst., Dept. of Normal Anat. and Leningrad Sci.-Res. Inst. of Phys. Culture, Sect. of Biochem., USSR).
Arkhiv Anatomii, Gistologii i Embriologii, vol. 54, Apr. 1968, p. 61–65. 14 refs. In Russian.

The experiments were conducted on albino rats. The animals were subjected to experimental training (swimming) under conditions of normal diet and diet enriched with protein hydrolysate, activating the synthesis of muscle proteins. There were observed various degrees of working hypertrophy of muscles manifested by an increase in surface of the muscle fibers section, increased nuclei dimensions na myofibril number on the cross-section of the fiber. The number of nuclei, the nucleo-plasmic ratio and the length of sarcomeres suffered no statistically reliable changes. Increase in the cross-section of fibers, nuclei dimension and number of fibrils was statistically the same and, consequently, under the training conditions applied the correlation between sarcoplasmic, fibrillar and nuclear elements in the trained muscles remained the same.

A68-81890
CHRONIC ACTION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLOROETHYLENE ON NEWBORN ANIMALS [O KHRONICHESKOM DEISTVII MALYKH KONTSENTRATSII ETILENA I TRIKLORETILENA NA ORGANIZM NOVOROZHDENNYKH ZHIVOTNYKH].
M. L. Krasovitskaia and L. K. Maliarova (Ufa Sci.-Res. Inst. of Hyg. and Prof. Diseases and Molotov Med. Inst., USSR).
Gigiena i Sanitariia, no. 5, May 1968, p. 7–10. In Russian.

The effect and tolerance level of ethylene and trichloroethylene and of animals of different age groups were studied in experiments carried out on two groups of albino rats (adults and newborns). The findings were that long term continous inhalation of the investigated substances had an inhibiting and hypotensive effect and produced disturbances of subordinative chronaxy. A more pronounced effect was produced by the poisons in the growing body. When animals were subjected to the action of poisons during the development of the body, more profound and earlier changes occurred than in the bodies of animals subjected to the action of these substances at much later periods of life. Consequently, for hygienic standardization it is more expedient to start studying the action of the mentioned compounds on animals from the time of their birth.

A68-81891
PROTECTIVE ACTION OF ORGANOPHOSPHORIC COMPLEXES IN INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS [O ZASHCHITNOM DEISTVII FOSFORORGANICHESKIKH KOMPLEKSONOV PRI INTOKSIKATSII RASTVORIMYMI SOEDINENIIAMI BERILLIIA].
O. G. Arkhipova, P. P. Dvizhkov, T. A. Kochetkova, and A. S. Ivanova (USSR, Acad. of Med. Sci., Inst. of Labor Hyg. and Occupational Diseases, Moscow).
Gigiena i Sanitariia, no. 5, May 1968, p. 26–31. In Russian.

The protective effect of certain substances was studied during acute intoxication of white mice and albino rats with soluble beryllium salts. The findings were that introduction of aminoalkylpolyphosphonic acids protected albino rats and mice from death by absolute lethal doses of $BeCl_2$ and $BeSO_4$. Animals, receiving aminoalkylpolyphosphonic acid after parenteral introduction of beryllium salts, presented no dystrophic and necrobiotic changes of internal organs that are specific to the intoxication with beryllium salts.

A68-81892
ON THE OPTIMUM ROOM TEMPERATURE FOR LIGHT WORK.
Toyohiko Miura (Inst. for Sci. of Labour, Div. of Hyg., Tokyo, Japan).
(Intern. Congr. on Ergonomics, 3rd, Birmingham, Sep. 11–15, 1967).
Journal of Science of Labour, vol. 44, part 2, Mar. 1968, p. 1–9. 12 refs.

An investigation was made on the thermal sensation and comfort of workers in a precision machine factory and business machine operators. The temperature at which the workers felt neither cool nor warm was higher in summer than in winter. The temperature of thermal indifference in business machine operators was higher in females than in males, especially in summer. A series of experiments was also conducted from 1959 to 1965 for the purpose of determining the optimum temperature of room cooling for sedentary work and muscular work. The optimum temperature of room cooling for sedentary work and muscular work. The optimum temperature of room cooling for sedentary work was estimated in relation to the outdoor temperature on the basis of experiments and surveys. According to physiological responses, feeling of warmth and comfort and performance of mental work, the temperature of 25°C. with a relative humidity of 50 to 60% seemed to be good for mental work.

A68-81893
A NEW METHOD FOR TESTING ISOMETRIC MUSCLE STRENGTH UNDER STANDARDIZED CONDITIONS.
L. Bäcklund and L. Nordgren (U. Hosp., Uppsala County Rehabil. Centre, and Dept. of Clin. Physiol., Uppsala, Sweden).
Scandinavian Journal of Clinical and Laboratory Investigation, vol. 21, no. 1, 1968, p. 33–41. 7 refs. Folksams Rehabiliteringsrad and Riksföreningen mot Reumatism supported research.

To obtain a high precision and a good standardization of measurements of maximal isometric muscle strength in man some older methods were further developed. A special adjustable test chair was constructed, and a new type of mechanoelectric force transducer was modified and mounted on different types of stands. The muscular strength of a great number of muscle groups was tested in 25 young healthy male volunteers. The test values obtained were compared to normal values earlier published. The new method has proved to be reliable and easy to perform, and to have a high degree of precision.

A68-81894
THE VISUAL PATHWAYS OF THE BRAIN.
David Regan (Keele, U., Dept. of Commun., Staffordshire, Great Britain).
New Scientist, vol. 39, Jul. 25, 1968, p. 181–183.

The mechanisms by which the brain classifies visual information remain problematical: responses that are specific to certain types of stimulus have been identified using scalp electrodes, but some of these bear little relation to subjective perceptions. The answer may lie in bringing together studies made at different scales of observation, from single cells upward.

A68-81895
DAILY RHYTHMS IN THE CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA.
Richard J. Wurtman, Christopher M. Rose, Chuan Chou, and Frances F. Larin (Mass. Inst. of Technol., Dept. of Nutr. and Food Sci., Cambridge).
New England Journal of Medicine, vol. 279, Jul. 25, 1968, p. 171–175. 16 refs.
NASA Grant NGR-22-009-272, Contract AF-41[609]-3151, Grants PHS AM-11237, PHS AM-11709, PHS AM-06274, and PHS FR 88.

Blood was collected at intervals during a 24 hr. period from 23 healthy male volunteers on diets containing various amounts of protein; the plasma was assayed for 16 amino acids. Among subjects receiving 0.71 or 1.5 g. of protein per kg. of body weight, the concentrations of tyrosine, phenylalanine and tryptophan tended to be lowest at 2:00 and highest at or after 10:30 a.m. Volunteers given a diet containing less than 0.04 g. of protein per kg. showed similar fluctuations in the concentrations of the above amino acids and methionine, but peak plasma levels were observed somewhat earlier in the morning. All the amino acids studied showed some tendency to vary with time of day. Tyrosine, tryptophan, phenylalanine, methionine, cysteine and isoeucine underwent the greatest per cent changes; the amino acids whose plasma concentrations were highest (that is, alanine, glycine and glutamic acid) showed the least tendency to vary.

A68-81896
EFFECTS OF LASER IRRADIATION ON SOME SEROLOGIC PROPERTIES OF HUMAN GAMMA GLOBULIN.
Elias Cohen, Edmund Klein, and Samuel Fine (Roswell Park Mem. Inst., Dept. of Dermatol. and Clin. Labs., Buffalo, N. Y. and Northeastern U., Boston, Mass.).
Life Sciences, vol. 7, part 2, Jun. 15, 1968, p. 569–581. 24 refs.
(Contracts DA-49-193-MD-2436, DA-49-193-MD-2437, and DA 1-R01-RH-00361 RAD.

High and low intensities of laser irradiation of 1% saline solutions of human (HGG) and rabbit (RGG) gamma globulin produced different effects than that of a thermal nature *per se* upon the precipitin reactions with rheumatoid factor. Heat treatment of globulin solution at 63°C. for 15 min. caused aggregation and

measurably more precipitation with rheumatoid factor than untreated globulins, whereas the laser irradiation reduced or destroyed the capacity for the globulins to precipitate rheumatoid factor. Precipitin reactions between rabbit anti-HGG and laser irradiated HGG demonstrated a shift of position of precipitin curve peaks, as well as reduction of total amount of precipitation. Ultracentrifugal analyses to date did not reveal additional components with laser irradiation of HGG, as were observed with heat treatment of globulins. Immunochemical agar gel diffusion and immunoelectrophoretic analyses revealed slight differences of laser irradiated from native globulins. It was concluded that the interactions of high intensity electromagnetic (laser) radiation with globulins differed from those of heat *per se*, as demonstrated by differences in the serologic activity, certain physico-chemical changes and other pertinent parameters of the respective reactions.

A68-81897
THE EXCITATION OF CENTRAL CHOLINERGIC MECHANISMS BY STIMULATION OF THE AUDITORY PATHWAY.

M. J. Neal, B. A. Hemsworth, and J. F. Mitchell (Cambridge, U., Dept. of Pharmacol., Great Britain).

Life Sciences, vol. 7, part 1, Jul. 1, 1968, p. 757–763. 7 refs. Med. Res. Council and Roy. Soc. supported research.

The release of acetylcholine from nerve terminals in the cerebral cortex has been studied during stimulation of the auditory pathway. It has been found that auditory stimuli to the ear and electrical stimulation of the medical geniculate nucleus both produce a large increase in acetylcholine release from the appropriate auditory receiving area of the cortex. A simultaneous, but smaller increase in acetylcholine release occurs from other regions of the cortex during stimulation. The results are compared with analogous observations made on the visual pathways.

A68-81898
THE RESISTANCE TO RADIAL ACCELERATIONS AMONG PILOTS OF THE BULGARIAN AIR FORCE [VURKHU USTOICHIVOSTTA KUM RADIALNITE USKORENIIA NA LETTSI OT VVS].

K. Kabakchiev and L. Minkovskii].

Voenno Meditsinsko Delo, vol. 23, Feb. 1968, p. 49–54. 7 refs. In Bulgarian.

The first investigations on pilot resistance to radial acceleration carried out on a Bulgarian constructed centrifuge were presented. Three experimental groups were tested. These were healthy pilots, pilots who have had syncopes in the course of the last three to four yr. and pilots suffering with some kind of functional disorder. The results of the experiments showed that the healthy pilots withstood the stress with blackout occurring at 5.96 g.; the pilots in the second group had almost the same resistance 5.8 g.; indicating the accidental character of their collapses; the small number of pilots tested in the third group did not allow any positive conclusions to be made on the resistance to radial acceleration in sickness.

A68-81899
JENDRASSIK'S MANEUVER AND VALSALVA'S EXPERIMENT [JENDRASSIKUV MANEVR A VALSALVUV POKUS].

L. Stejskal.

Ceskoslovenska Neurologie, vol. 31, May 1968, p. 168–172. 13 refs. In Czech.

Under certain conditions muscular activity can be found in some skeletal muscles which take no part in respiration, depending on the phase of respiration. Maximum increase in this cyclic respiratory activity (CRA) takes place during Valsalva's experiment. The same favorable conditions for the CRA are present in Jendrassik's maneuver. It could be proved by cross experiments that this activity does not appear (or remains negligible) if the person examined does not hold his breath during Jendrassik's maneuver and continues to breathe normally. The principle underlying Jendrassik's maneuver, and the increased neuromuscular excitability resulting from it, is not the pulling of the interlocked hands (which is thought to cause distraction, relaxation, disinhibition or increased muscular afferentation), but the change in breathing which is characterized by inhibited exhalation after a deep breath, i.e. by Valsalva's experiment.

A68-81900
PRIOR RECALL OF NEWLY LEARNED ITEMS AND THE RECENCY EFFECT IN FREE RECALL.

A. D. Baddeley (Med. Res. Council, Appl. Psychol. Res. Unit, Cambridge, Great Britain).

Canadian Journal of Psychology, vol. 22, Jun. 1968, p. 157–163. 10 refs.

It has been shown previously that in free-recall learning, newly learned items tend to be recalled earlier than old items which have already been learned, not later as a simple response-strength theory would predict. Experiment I replicated this result and showed: (1) that a disproportionate number of newly learned items come from the last few items presented; and (2) that the last items presented tend to be among the first recalled, whether "new" or "old". Experiment II showed that when recall is delayed by a task which prevents rehearsal, the effect is reversed; new items are recalled slightly later than old items. It is argued that these results reflect the operation of the short-term component in free-recall learning.

A68-81901
HEMIFIELD DIFFERENCES IN VISUAL PERCEPTION OF REDUNDANT STIMULI.

E. Rae Harcum (William and Mary, Coll., Williamsburg, Va.).

Canadian Journal of Psychology, vol. 22, Jun. 1968, p. 197–211. 24 refs.
Grant PHS HD 00207-08.

This study investigated effects of the mutual relevance of stimuli in right and left visual hemifields on the organizational processes of pattern perception, as inferred from the observers' relative accuracy of reproducing the stimuli in opposite hemifields. For eight-letter patterns, tachistoscopically exposed across fixation, two predictions were made: (a) redundancy in left and right visual hemifields would reduce the usual superior perceptual accuracy for stimuli in the left hemifield; and (b) a differentially large space between the two central letters of the pattern would produce a tendency for the observer to respond to the stimuli on one side of fixation as though there were no stimuli in the opposite hemifield. This would reduce the probability of finding redundancy effects. These predictions were based upon the assumption that redundancy affects output accuracy by facilitating a reconstruction of the stimuli-i.e., a response bias. Although the predicted results were obtained in some instances, in others they were not. Therefore it was concluded that redundancy of stimuli in opposite hemifields also influences the mnemonic encoding of patterns. Moreover, the task-specific nature of the differences between hemifields implies that the so-called dominance in perception for stimuli on one side of fixation does not result from a fixed prepotency of one hemiretina or cerebral hemisphere.

A68-81902
PAIRED-ASSOCIATE LEARNING AS RELATED TO "PRONUNCIABILITY" AND WORD FREQUENCY.

John F. Hall (Pa. State U., Dept. of Psychol., University Park).
Canadian Journal of Psychology, vol. 22, Jun. 1968, p. 212–216. 10 refs.

The Underwood and Schulz hypothesis, which posits that pronunciability rather than frequency is the major variable in learning, was examined by using words which differed in objective frequency but which were pronounced in the same way. Four P-A lists were constructed which used the varying combinations of high- and low-frequency stimulus and response words (H-H, H-L, L-H, L-L). Results,contrary to the Underwood–Schulz position, revealed that learning was most rapid for the H-H combination, followed by L-H, H-L, and L-L.

A68-81903
AN EVALUATION OF GUIDANCE IN LEARNING A MOTOR SKILL.
C. H. Baker (Human Factors Res., Inc., Santa Barbara Res. Park, Goleta, Calif.).
Canadian Journal of Psychology, vol. 22, Jun. 1968, p. 217–227. 13 refs.
Contract Navy N61339-66-C-0037.

An experiment was conducted to determine the value of manual guidance in learning a pursuit tracking task. Subjects were employed in groups of three. One subject in each group tracked the target for a total of 48 min. at a master tracking console. A second subject operated at a slaved tracking console which precisely duplicated the movements of the target, cursor, and joystick at the master console. The second subject watched the target and cursor movement while simultaneously grasping the slaved joystick. The third subject simply watched the tracking activity at the master console. The second and third subjects of each group then tracked the target at the master console for 48 min. Six wk. later all subjects were tested for retention of skill. It was concluded that in acquiring a continuous adjustive skill of the type employed in this experiment, guidance is an aid to subsequent performance in initial trials, but has no effect upon performance as the skill improves and has an adverse effect upon performance when the skill is tested for retention six wk. later.

A68-81904
A CONTRIBUTION TO THE DETERMINATION OF DAZZLING EFFECT BY THE CRITICAL FLICKER FREQUENCY [PRISPEVEK K ZJISTOVANI OSLNENI POMOCI KRITICKE FREKVENCE SPLYVANI BLIKU].
R. Miksl.
Ceskoslovenska hygiena, vol. 13, Apr. 1968, p. 216–225. 40 refs. In Czech.

The critical flicker frequency method was used to estimate the effect of dazzle in man. The whole experimental group could be divided into those who reacted to successive glare by reaching or overcoming the original level of critical flicker frequency before the dazzling effect, and those who did not reach this level. These persons also reacted by a greater decrease of critical flicker frequency to simultaneous glare and stress of visual analyzer by flicker light. The reasons of the phenomenon were discussed and the speed of rhodopsin regeneration was considered to be the main cause. The results showed the method to be promising; however, some further verification and detailed elaboration seemed necessary.

A68-81905
A DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE.
Richard Shadduck, Donald Howard, and Frederick Stohlman, Jr. (Tufts Med. School, St. Elizabeth's Hosp., Boston, Mass.).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, May 1968, p. 132–136. 10 refs.
Grants NHI HE50600 and NHI HE07542.

A strain difference in the response to hypoxia of the CAF_1 and CF_1 mice is described. The CF_1 strain developed significant erythropoietin production in response to hypoxia, and after three wk. marked polycythemia. In the CAF_1 mouse both erythropoietin production and polycythemia were minimal. Both strains produced comparable amounts of erythropoietin in response to posthermorrhagic or hemolytic anemia. The implications of these differences are discussed.

A68-81906
CECAL ENLARGEMENT, CARDIAC OUTPUT, AND O_2 CONSUMPTION IN GERMFREE RATS.
Bernard S. Wostmann, Edith Bruckner–Kardoss, and P. L. Knight, Jr. (Notre Dame, U., Lobund Lab., Ind.).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, May 1968, p. 137–141. 23 refs.
Grants PHS HD 00855 and PHS FR 00294.

Germfree rats have cardiac output and O_2 consumption values respectively 30% and 24% lower than found in comparable conventional rats. Surgical removal of the enlarged cecum typical for these animals resulted in cardiac output values similar to those obtained with conventional rats, while O_2 consumption increased significantly to levels only slightly lower than seen in the conventional control group. No significant difference in body temperature was found between comparable groups of germfree and conventional rats.

A68-81907
ENHANCEMENT OF INTESTINAL IRON ABSORPTION BY A HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS.
Geoffrey M. Brittin, James Haley, and George Brecher (Calif., U., Med. Center, Div. of Clin. Pathol. and Lab. Med., San Francisco).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, May 1967, p. 178–184. 25 refs.

Parabiotic rats have been employed in an attempt to determine if hypoxia can enhance intestinal iron absorption by a humoral effect. The mean absorption of iron by rats whose partners were exposed to hypoxia was significantly greater than that of rats whose partners were normally oxygenated ($0.025 > p > 0.05$). Additional experiments using bilaterally nephrectomized rats exposed to hypoxia indicated that: (1) bilaterally nephrectomized rats absorbed less iron than sham-operated controls; (2) hypoxia increased the absorption of iron in bilaterally nephrectomized animals over that of nephrectomized rats that were normally oxygenated; and (3) this enhanced absorption of iron by the bilaterally nephrectomized rats was not associated with increased erythropoiesis. If one assumes that what applies in the single animal also holds for the parabiotic pair and vice versa, the results of these experiments suggests that intestinal iron absorption may be mediated by a transferable humoral factor that is not erythropoietin.

A68-81908
PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE.
Walter J. Loesche (Forsyth Dental Center, Boston, Mass.).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, May 1968, p. 195–199. 13 refs.
Grant NIDR DE 01471 and Colgate-Palmolive Co. supported research.

Cecal contents of gnotobiotic rats and mice have ten times as much soluble protein and from 20 to 200 times as much soluble carbohydrate as their conventional controls. About 12 to 29% of the soluble protein was precipitated by 10% trichloroacetic acid (TCA) and was shown to contain elevated levels of trypsin and chymotrypsin (i.e., from 90 to 200 more than conventional animals per 100 gm. of body wt.). Another 30–50% of the protein was soluble in 10% TCA but could be precipitated by 80% ethanol.

The material was most likely mucinous in nature as it contained carbohydrate and was a high molecular weight. The gnotobiotic ceca had five to eight times more insoluble material per 100 gm. of body weight than that found in conventional ceca. The demonstration of endogenous enzymes and high molecular weight mucins suggested that there is an impairment in the digestion and reabsorption of endogenous nitrogen in the gnotobiotic animals.

A68-81909
INVOLVEMENT OF THE OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF THE RETICULOENDOTHELIAL SYSTEM.

Thomas M. Saba and N. R. Di Luzio (Tenn., U., Med. Units, Dept. of Physiol. and Biophysics, Memphis).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, Jul. 1968, p. 869–875. 23 refs.
Grant PHS GM-352 and AEC supported research.

Food deprivation was found to significantly impair the functional activity of the reticuloendothelial (RE) system as evaluated by the vascular clearance of the gelatinized "RE test lipid emulsion." Depression was associated with an impairment in hepatic phagocytosis and an increased lung uptake. Opsonization of the gelatinized "RE test lipid emulsion" prior to injection completely eliminated the RE depression observed during the starved state. Determinations of the relative opsonic activities of sera from normal and starved rats suggested that the RE depression induced by starvation is mediated by a derangement in opsonic activity. Opsonin depression and subsequent impairment in RE phagocytosis due to a failure in the "recognition" mechanism may be the basis for the lower resistance of infection during profound malnutrition.

A68-81910
THE EFFECT OF STARVATION ON PALMITATE-1-^{14}C INCORPORATION AND THE FREE FATTY COMPOSITION OF RAT MUSCLE.

Gustav Schonfeld and Leopoldo L. Rodriguez (USAF School of Aerospace Med., Physiol. Branch, Brooks AFB, Tex.).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, Jul. 1968, p. 875–879. 14 refs.

Skeletal muscle free fatty acids (FFA) contents are increased during starvation in the rat. An attempt was made to determine the source of these FFA by incubating the intact rat diaphragm preparations of fed and 72-hr. starved animals in palmitate-albumin solutions containing palmitate-1-^{14}C and by assaying the composition of the plasma and tissue FFA and tissue triglyceride fatty acids (TGFA) of fed and starved animals. The one-min. uptake of label was minimally influenced by starvation and not at all by incubation in ouabain, Amytal or 100% nitrogen. Steady state levels of label were minimally increased by starvation, but the increases were insufficient to account for the enhanced tissue FFA levels. Tissue FFA composition differed from both plasma FFA and tissue TGFA. Starvation from zero to 96 hr. did not affect tissue FFA composition. These results are compatible with the following conclusions: (1) initial association between the albumin-FFA complex and the diaphragm is not affected by metabolic inhibitors; (2) intracellular FFA do not approach the composition of either the plasma or muscle TGRA during progressive starvation suggesting selectivity in uptake or utilization or both; (3) the selectivity of the processes responsible for tissue FFA size and composition is unaltered by starvation; and (4) tissue FFA are increased during starvation primarily from intracellular sources.

A68-81911
EARLY RADIATION LETHALITY: ENZYME RELEASE AND THE PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR.

S. Phyllis Stearner and Steven A. Azuma (Argonne Natl. Lab., Div. of Biol. and Med. Res., Ill.).
Proceedings of the Society for Experimental Biology and Medicine, vol. 128, Jul. 1968, p. 913–917. 14 refs.
AEC supported research.

Soybean trypsin inhibitor (SBTI) can act to reduce early radiation lethality (<24 hr.) in the three day chick as well as in the 14 day chick embryo. Plasma acid phosphatase activity was increased more than two-fold in lethally irradiated chicks, but only small increases were demonstrated in groups that received near-lethal exposures or that were protected by SBTI before a lethal exposure.

A68-81912
CORRELATION BETWEEN THE PHYSIOLOGICAL STATE OF BACTERIA AND THE RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE.

Zs. Nagy, F. Hernádi, P. Kovács, and T. Vályi-Nagy (U. Med. School, Dept. of Pharmacol., Debrecen, Hungary).
Archiv für Mikrobiologie, vol. 61, May 28, 1968, p. 327–334. 8 refs.

Escherichia coli 15 T$^-$ cells were cultured in the presence of cysteine, then removed and subjected to x-ray irradiation in cysteine-free buffer. The radiation-sensitivity was then found to decrease in inverse ratio to the concentration of cysteine used. This phenomenon occurred only with log-phase cells, while the radiosensitivity of stat-phase bacteria remained unchanged. The biochemical background of this phenomenon was also studied by means of ^{35}S-Cysteine. The extent and distribution of cysteine incorporation into the fractions of log-phase cells were found to differ from those occurring in the fractions of stat-phase cells. The biochemical radioprotective effect of cysteine described above suggests two different explanations: (a) the radioresistance induced by cysteine presupposes an active metabolic state of the cells, which may correlate with the induction of the repair systems; and (b) the cysteine incorporated by the cells provides a radioprotective effect; hence only the radiosensitivity of log-phase cells decreases, while that of the stationary phase cells remains unchanged owing to their inability to incorporate cysteine in an amount rendering them effective radioprotectors.

A68-81913
CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS.

J. Petřek, V. Golda, and P. Lisoněk (Palacky U., Inst. of Higher Nervous Activity and Dept. of Anat. Med. School, Olomouc, Czechoslovakia).
Experimental Brain Research, vol. 6, Jul. 4, 1968, p. 19–31. 48 refs.

Under a short rhythmic acoustic stimulation lasting for several minutes and a prolonged rhythmic stimulation, a decrease and increase was observable in the amplitude of the individual components of cortical evoked responses. These responses were registered in the cat in the anterior portion of the medial suprasylvian gyrus and in the primary region. The changes, however, were not dependent upon the duration of the rhythmic acoustic stimulation but they reflected changes in the amplitude of the electroencephalogram (EEG) of the corresponding region. An increase in the amplitude integral of the EEG of the cortical acoustic region was connected with a parallel increase in the magnitude of the first positivity and negativity of the cortical response registered in the same region. The first positivity and negativity registered during acoustic stimulation in the suprasylvian gyrus varied with changes in the value of the EEG amplitude integral of this region in the same way as those of the primary acoustic response. The changes of the second positive wave registered during rhythmic stimulation in the primary region were somewhat more complicated, however.

A68-81914
DISCHARGE OF FRONTAL EYE FIELD NEURONS DURING SACCADIC AND FOLLOWING EYE MOVEMENTS IN UNANESTHETIZED MONKEYS.
Emilio Bizzi (Natl. Inst. of Mental Health, Lab. of Clin. Sci., Bethesda, Md. and Mass. Inst. of Technol., Dept. of Psychol., Cambridge).
Experimental Brain Research, vol. 6, Jul. 4, 1968, p. 69–80. 31 refs.

The cortical mechanism of eye movement control was investigated by recording single cell activity from the frontal eye field (FEF) in unanesthetized monkeys seated in a primate chair with head restrained. Two types of cells were found. Type I meurons fired during voluntary saccades occurring in a given direction and during the fast phase of nystagmus. Cells of this type were silent during slow pursuit movement. Type II cells showed steady discharge when the eyes were oriented in a specific direction. These cells discharged also during smooth pursuit movements and the slow phase of nystagmus, provided that the eyes were moving across positions which would have been associated with neuronal activity had the eyes come to rest there. All of Type II and a few of Type I neurons were identified by antidromic response to stimulation of the cerebral peduncle. These results indicate that cortical neurons have patterns of discharge distinctly related either to saccadic or to pursuit movements, in line with the view that these two different types of eye movement are generated by distinct neuronal mechanisms.

A68-81915
ALVEOLAR VENTILATION.
W. M. Arnott, G. Cumming, and K. Horsfield (Queen Elizabeth Hosp., Birmingham, Great Britain).
Annals of Internal Medicine, vol. 69, Jul. 1968, p. 1–12. 12 refs.
Am. Coll. of Physicians, 49th Ann. Session, Boston, Apr. 2, 1968.
Contract AF 61(052-775) and Brit. Heart Found. supported research.

Evidence is presented that the design of the air passages in respect of dimensions and the ratios of diameters of parent to daughter branches and angles of branching closely approximate the theoretical optimum for mass movement of gas down to the level of terminal bronchioles (0.6 mm. in diameter). Distal to this point, the geometry of the passages support the hypothesis that gas movement is by molecular diffusion. The single-breath nitrogen washout experiment using oxygen indicates an inhomogeneity of gas mixing. Studies of the pattern of inhomogeneity using neon, sulphahexafluoride, and an aerosol of di-2-ethylhexyl sebacate as an indicator gas, along with varying periods of breath holding, indicate that about two thirds of the inhomogeneity is due to stratification or imperfect diffusion. The remaining third is due to regional inhomogeneity consequent upon variations in the transit times of mass movement of gas. A detailed analysis of the multiple-breath nitrogen washout procedure points to stratified inhomogeneity as the major cause of departure from uniformity of distribution of ventilation. Evidence points to stratified or diffusion inhomogeneity as the major ventilatory defect in chronic bronchitis, especially when centrilobular emphysema is present.

A68-81916
THE EFFECTS OF AMPHETAMINE ON THE SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS.
Akira Shimizu and Harold E. Himwich (Galesburg State Res. Hosp., Thudichum Psychiat. Res. Lab., Ill.).
Psychopharmacologia, vol. 13, Jul. 5, 1968, p. 161–169. 25 refs.

The effects of amphetamine on the sleep-wakefulness cycle were studied in 48 kittens during the growth period of one to 28 days of age. Recordings of the electroencephalograms and electromyograms of the posterior neck muscles and respiratory rhythms were made as well as observations of gross behavior. Percent time of wakefulness was increased with amphetamine (0.3 mg./kg.). This effect became more marked with age, i.e., being more significant after 16 to 18 days of age ($P < 0.005$) than before ($P < 0.05$). These increases in the intensity of the effect during growth may be related to the postnatal development of the structures responsible for wakefulness. Percent time of "activated" sleep was diminished significantly at all ages including the newborns ($P < 0.005$). This lack of the influence of age suggests that the structures responsible for "activated" sleep are well developed at birth. The increase of percent time of slow wave sleep was observed. This increase is regarded as a "passive" manifestation of time left available after a severe diminution of "activated" sleep time and relatively slight increase of wakefulness time during amphetamine medication.

A68-81917
BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE.
Arthur Yuwiler, William Greenough, and Edward Geller (Calif., U., School of Med., Depts. of Psychiat. and Psychol. and Veterans Admin. Center, Neurobiochem. Lab., Los Angeles).
Psychopharmacologia, vol. 13, Jul. 5, 1968, p 174–180. 16 refs.
Grants PHS HD 01058, PHS AM 08775, and PHS FR-3.

Magnesium pemoline decreased training response latency in a shock avoidance situation, of male, but not female rats. The groups did not differ on a 24-hr. retention test. The drug had no discernible effect on orotic acid incorporation into brain or liver RNA or upon RNA content. Liver RNA was slightly increased, probably because of stimulated drug metabolism. Magnesium pemoline did not augment hormonal stimulation of nuclear RNA synthesis and, therefore, does not generally stimulate RNA synthesis. The behavioral effects of magnesium pemoline are probably not related to RNA metabolism.

A68-81918
PROLONGED ORGANOTROPHIC GROWTH OF HYDROGENOMONAS H 16 IN THE CHEMOSTAT [LANGFRISTIGES ORGANOTROPHES WACHSTUM VON HYDROGENOMONAS H 16 IM CHEMOSTATEN].
Christel König and H. G. Schlegel (Georg August-U., Inst. für Mikrobiol., Göttingen, West Germany).
Archiv für Mikrobiologie, vol. 62, Jun. 25, 1968, p. 41–55. 36 refs. In GERMAN.

A chemostat was developed which permits organotrophic growth of *Hydrogenomonas H 16* for longer periods. Growth parameters (μ, Ks, and Y) were determined in static cultures with fructose as the substrate. During prolonged growth in the chemostat, mutants were selected which grow faster than the original strain. These mutants were characterized by growth parameters different from those of the original strain. With an increasing growth rate, the respiratory rate (+ fructose) increased and approached a constant value of a doubling time of 2.1 hr. The increase in endogenous respiration was comparatively small. The specific activities of several enzymes participating in fructose metabolism (hexokinase and the enzymes of the Entner-Doudoroff-system) decreased with diminishing growth rates. After the wild type strain had been growing for several weeks in the chemostat with fructose as the limiting substrate, mutants became dominant which were able to utilize glucose. The selection was due to an impurity of glucose (0.0001%) present in nutrient medium containing 0.1% fructose.

A68-81919
AN EXPERIENCE IN SUBMARINE PSYCHIATRY.
Jonathan L. Serxner.
American Journal of Psychiatry, vol. 125, Jul. 1968, p. 25–30.

The psychiatric experience of a medical officer on two submerged Polaris submarine patrols, each lasting two mo. is presented. One psychiatric emergency—an acute paranoid schizophrenic reaction—was managed, and some minor anxiety reactions and depressions were treated. The author suggests the nature of the submarine's psychological atmosphere by means of a brief discussion of the submarine as a physical entity, the patrol cycle, and the procedures of personnel selection and training.

A68-81920
VISUAL EVOKED RESPONSES IN MAN BY LOCALIZED RETINAL STIMULATION.
Norio Ohba (Tokyo, U., School of Med., Dept. of Ophthalmol., Bunkyo-ku, Japan).
Japanese Journal of Ophthalmology, vol. 11, no. 4, 1967, p. 221–226. 9 refs.

Visually evoked responses of five normal adults were recorded following localized retinal stimulation. The spot light on the cathode ray oscilloscope was employed as the punctiform light stimulus. The blind spot was clearly detected on the visually evoked responses during light adaptation. At the inion consistent surface, the positive wave having a 90 to 170 msec. latency was invariably larger in amplitude and shorter in latency for foveal stimulation than for peripheral retinal stimulation. It is concluded that not only the amplitude but latency of the evoked responses is closely related to retinal sites stimulated.

A68-81921
STEREOPSIS AND FORM DISPARITY.
R. B. Lawson (Vt., U., Burlington).
Psychological Record, vol. 18, Jul. 1968, p. 361–368. 16 refs.
Grant NINDB NB07301-01.

Ten observers estimated stereoscopic depth arising from matrix-defined disparate forms in the absence of contour or edge disparities. Magnitude of depth varied directly with the lateral displacement of the form and the shape of the stereoscopic form and the disparate form in the half-images was similar, just as in the case of contour disparate stereograms. The findings suggest that the concept of disparity must not be limited solely to contours or edges.

A68-81922
EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY (DL_{CO}) DURING REST AND LEG EXERCISE.
Y. C. Hsieh, J. C. Ross, G. R. Small, and E. C. Thompson (Ind. U., School of Med., Heart Res Center and Dept. of Med., Indianapolis).
American Journal of the Medical Sciences, vol. 256, Jul. 1968, p. 9–17. 21 refs.
Am. Federation for Clin. Res., Midwestern Sect. Meeting, Chicago, Nov. 1966.
Contract AF 33(615)2922, Grants PHS HE-04080, PHS HE-06228, and PHS HTS-5363.

This study was intended to determine whether or not the effect of exercise on pulmonary diffusing capacity for carbon monoxide (DL_{co}) is altered by limiting blood flow from exercising limbs. Breathholding DL_{co} was determined in 12 normal subjects, seated and supine, at rest and during exercise, with and without venous occluding tourniquets on arms and thighs, and after release of tourniquets. The increase in DL_{co} after three min. of exercise was not significantly different with and without tourniquets, seated and supine. The initial rise in DL_{co}, during the first 10 sec. of exercise, was significantly decreased by venous occluding tourniquets. This study shows that partially occluding the flow of blood (and humoral substances) from exercising muscles does not alter the overall increase in DL_{co} produced by exercise, but does decrease the rise in DL_{co} during the first 10 sec. of exercise. It supports previous observations that the initial increase (first 10 sec. of exercise) and the later increase are caused by different mechanisms.

A68-81923
EVALUATING MEMBRANE POTENTIAL AND SPIKE PATTERNS BY EXPERIMENTER-CONTROLLED COMPUTER DISPLAYS.
William H. Calvin (Wash., U., School of Med., Depts. of Physiol. and Biophysics, and Neurol. Surg., Seattle).
Experimental Neurology, vol. 21, Aug. 1968, p. 512–534. 16 refs.
Grants NIH NB 04053, NIH NB 05934, NIH NB 01752, and NIH 5TI GM 260.

Computer scope displays are used to inspect and measure raw data, so that the experimenter performs all pattern recognition judgments. These judgments are entered into computer memory by turning knobs which vary program constants. This allows the experimenter to measure, using rapid hand-to-eye coordination, data which one would not otherwise entrust to an automatic type computer program except after intensive inspection on a film-reader or the like. This technique enables methods to be developed for the following new areas of neurophysiological data analysis: bursts during spontaneous firing; analysis of membrane potential during rhythmic firing; and analysis of spontaneous miniature postsynaptic potentials in the synaptic noise. Working models of the rhythmic firing process, developed from the intracellular measurements, may also be constructed on the computer using methods described here. The membrane potential and spike pattern analysis methods described are generally appliable to many other types of extracellular and intracellular data. The technique of doing one's film-reading on the computer display provides a middleground between punched cards and the completely automatic computer pattern recognition programs.

A68-81924
RESPONSE OF BIOLOGICAL WASTE TREATMENT SYSTEMS TO CHANGES IN SALT CONCENTRATIONS.
D. F. Kincannon and A. F. Gaudy, Jr. (Okla. State U., School of Civil Eng., Bioeng. Labs., Stillwater).
Biotechnology and Bioengineering, vol. 10, Jul. 1968, p. 483–496. 14 refs.
Grants USDI WP00075 and USDI 1T1-WP-19.

The effect of NaCl on the yield of biological solids and on the ability of continuously cultured heterogeneous microbial populations to remove substrate was assessed by changing the salt concentration in the inflowing synthetic waste. During the period of increasing the salt concentration to 30,000 mg./l. the system could not maintain a high substrate removal efficiency. However, after an acclimation period the system regained its former efficiency. Upon diluting the salt out of the system, a significant rise in cell yield was noted as the salt level passed through the range 8,000–10,000 mg./l. It was found that steady operation at a salt level of 8,000 mg./l. sustained the cell yield at a high level.

A68-81925
EFFECTS OF ISOMETRIC-ISOTONIC TRAINING ON THE SHOT PUT FOR DISTANCE AND MAXIMAL ISOMETRIC STRENGTH.
Eugene J. Antone (Ore. State U., Corvallis) and James S. Bosco (San Jose State Coll., Calif.).
American Corrective Therapy Journal, vol. 22, Jul.–Aug. 1968, p. 124–127. 19 refs.

Both the weight training (isotonic) and the Exer-Genie (isotonic plus isometric) groups improved significantly in the standing shot put test for distance and in elbow extension (static) strength as measured by the Cable-Tension Tensiometer Strength Test. The weight training and Exer-Genie methods of training were equally effective in improving strength and power.

A68-81926

SOME EFFECTS OF 1-HYOSCINE HYDROBROMIDE ON POST-ROTATORY SENSATION AND NYSTAGMUS IN MAN.

A. J. Benson and J. J. Brand (Roy. AF Inst. of Aviation Med., Farnborough and Roy. Naval Med. School, Alverstoke, Hants, Great Britain).

Quarterly Journal of Experimental Physiology and Cognate Medical Sciences, vol. 53, Jul. 1968, p. 296–311. 38 refs.

In a balanced double-blind trail six subjects were given, on three successive days, an injection of 0.3 mg. or 0.6 mg. of 1-hyoscine hydrobromide or normal saline, 30 min. before rotational tests of vestibular function were performed. Hyoscine caused a significant (P = 0.01) depression of the "slope" of the sensation cupulogram without alteration of the extrapolated "threshold". This effect was not significantly greater with the higher dose of the drug. In subjects who had received hyoscine there was an appreciable suppression of the post-rotational nystagmic response, and slow pendular oscillations of the eyes were frequently recorded. These effects were antagonized by mental arithmetic. It was concluded that hyoscine increased adaptation in the vestibular sensory system and released the oculomotor system from the ascending influence of vestibular and reticular projections.

A68-81927

THE EFFECT OF REPETITION ON MEASUREMENTS OF POST-ROTATIONAL TURNING SENSATION AND NYSTAGMUS IN MAN.

J. J. Brand (Edinburgh, U., Med. School, Dept. of Pharmacol., Great Britain).

Quarterly Journal of Experimental Physiology and Cognate Medical Sciences, vol. 53, Jul. 1968, p. 312–326. 19 refs.
Med. Res. Council supported research.

The effects of repetition on the post-rotational turning sensation and nystagmus obtained after deceleration from constant angular velocities are described. In a first series of tests decelerative stimuli from constant angular velocities of 60, 30, 15 and 7.5°/sec. were given to two groups of subjects but in a different order, and the mean responses obtained from both groups showed that habituation might occur in the course of a single test. In a second series with a different group of subjects, the test was repeated on each of nine consecutive days. The effects of habituation were again seen and there was a progressive decline in the responses which were obtained. The administration of 1-hyoscine (0.7 mg. base) one hr. before the test on the sixth day produced little additional effect in habituated subjects.

A68-81928

EFFECT OF MICROWAVES AT X-BAND ON GUINEA-PIG SKIN IN TISSUE CULTURE. 1. MICROWAVE APPARATUS FOR EXPOSING TISSUE AND THE EFFECT OF THE RADIATION ON SKIN RESPIRATION.

J. C. Lawrence (Birmingham Accident Hosp., Med. Res. Council Ind. Injuries and Burns Res. Unit, Great Britain).

British Journal of Industrial Medicine, vol. 25, Jul. 1968, p. 223–228. 18 refs.

An apparatus was designed which enabled small pieces of skin to be exposed to a uniform field of microwaves at X-band (8,730 MHz.) This was used to investigate the effect of these microwaves at elected energy levels on the metabolism of skin. It was shown that skin cultured *in vitro* exhibited a graded response to microwave energy, and a dose-response curve was constructed from this data. The effective power density (ED_{50}) of this curve was 4,740 mW./sq. cm. applied for one sec. Microscopical examination of three-day cultures of skin showed that histological abnormalities occurred if the specimens were exposed to intensities of microwaves causing more than 30% respiratory damage. The energy level at the ED_{30} was 2,880 mW./sq. cm. applied for one sec. Results were consistent with the hypothesis that tissue damage caused by irradiation with microwaves was due to the energy absorbed by the specimen being converted to heat.

A68-81929

EFFECT OF MICROWAVES AT X-BAND ON GUINEA-PIG SKIN IN TISSUE CULTURE. 2. EFFECT OF THE RADIATION ON SKIN BIOCHEMISTRY.

Shirley A. Carney, J. C. Lawrence, and C. R. Ricketts (Birmingham Accident Hosp., Med. Res. Council Ind. Injuries and Burns Res. Unit, Great Britain).

British Journal of Industrial Medicine, vol. 25, Jul. 1968, p. 229–234. 10 refs.

Small pieces of guinea-pig skin were exposed to a uniform field of microwaves at X-band (8,730 MHz.). Measurements showed that 26% of the incident energy was reflected, 34% was absorbed, and the remaining 40% was transmitted. Absorbed energy was converted to heat, causing a rise in the temperature of the skin. After exposure to microwaves the skin was maintained *in vitro* on a nutrient medium. Uptake of radioactive substances from the medium into skin constituents was measured. A graded reduction in the uptake of sulphate ions into chondroitin sulphate, proline into collagen, and of phosphate into phospholipid, nucleic acid, and phosphorprotein fractions was found. The incident energy density causing 50% reduction of all these biochemical activities was approximately 4,750 mJ./sq. cm. under the thermal conditions of the experiment. The cooling rate of the tissue is important in determining the effect of microwaves.

A68-81930

EFFECT OF ALCOHOL ON THE MOBILIZATION OF ALVEOLAR MACROPHAGES.

Joseph J. Guarneri and Gustave A. Laurenzi (N. J. Coll. of Med. and Dentistry, Jersey City).

Journal of Laboratory and Clinical Medicine, vol. 72, Jul. 1968, p. 40–51. 30 refs.
Grants PHS AP-00005-05 and CTR, U.S.A. 547

The effect of alcohol on the numbers and viability of alveolar macrophages in the lungs of mice was measured by combining techniques for quantitating the pulmonary clearance of bacteria and alveolar macrophage harvest. The inhalation of staphylococci provoked a brisk 2.5 fold increase in the numbers of alveolar macrophages. Within 15 min. after bacterial deposition, the numbers dropped 35%, but the elevated levels were restored at 30 min. and then maintained for a four hr. period. In contrast, animals given ethanol immediately after bacterial exposure failed to show recovery after the initial drop in macrophage numbers. These data demonstrate that alcohol has a deleterious effect on the mobilization of alveolar macrophages, namely, the maintenance of a macrophage response in relation to a bacterial challenge. Alcohol had no effect on the morphologic characteristics, viability and numbers of macrophages under basal conditions and the morphology and viability of provoked (mobilized) alveolar cells. These results are correlated with ethanol's demonstrated interference with bacterial clearance and other experimental and clinical evidence of the adverse effects of alcohol on pulmonary infection.

A68-81931

INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING.

Adrian I. Katz, Dorothy R. Hollingsworth, and Franklin H. Epstein (Yale U., School of Med., Dept. of Internal Med. and West Haven Veterans Admin. Hosp., New Haven, Conn.).
Journal of Laboratory and Clinical Medicine, vol. 72, Jul. 1968, p. 93–104. 18 refs.
Grants PHS HE-00834, PHS AM-5015, PHS 5-MO1-FR-0003807, and PHS K6-AM-21,578.

The influence of carbohydrate and protein on sodium excretion during fasting and refeeding is investigated in 11 obese patients. Protein as well as carbohydrate ingestion effectively interrupts the urinary sodium losses of fasting. When protein is taken, sodium retention may be observed even though ketoacidosis persists and despite an increased excretion of urea by the kidneys. The urinary excretion of aldosterone is not consistently altered by starvation or refeeding. The data do not support the hypothesis that carbohydrate has a unique effect upon sodium excretion in a starving man, but they are consistent with the suggestion that renal excretion of minerals during fasting is related to the breakdown or the conservation of tissue protein.

A68-81932
ACUTE ANTILIPOLYTIC EFFECTS OF ETHYL ALCOHOL AND ACETATE IN MAN.

Eugene A. Abramson and Ronald A. Arky (Boston City Hosp., Second and Fourth (Harvard) Med. Serv., Thorndike Mem. Lab. and Harvard Med. School, Dept. of Med., Boston, Mass.).
Journal of Laboratory and Clinical Medicine, vol. 72, Jul. 1968, p. 105–117. 30 refs.
Grants PHS AM-11176, PHS 2-A-5060, and PHS FR-76.

Ethyl alcohol has been shown to acutely lower plasma free fatty acid (FFA) levels in man. These studies were undertaken to further define the mechanism of this effect and the clinical situations in which the effect is obtained. In normal subjects, infusion of ethyl alcohol at a rate of 5.12 mmoles/min. resulted in an acute fall of plasma FFA and glycerol levels without changes in plasma glucose, insulin or growth hormone. Alcohol similarly lowered FFA after prolonged fasts, in decompensated diabetes and during epinephrine infusion. Acetate, a major metabolic product of alcohol oxidation, was infused at 0.155 to 5.12 mmoles/min. In normal subjects, acetate also produced a prompt fall in FFA and glycerol as well as total ketone levels. This occurred independently of the alkalinizing effects of acetate. Plasma glucose, insulin, growth hormone and blood lactate levels were unaffected. Acetate lowered FFA in subjects with thyrotoxicosis, during epinephrine infusion, and in the presence of beta-adrenergic blockade. These studies indicate that alcohol and acetate acutely depress lipolysis in man without producing alterations in measured neurohormonal factors, and they suggest that the effects of alcohol may be mediated by its metabolite, acetate.

A68-81933
RESPONSE SUPPRESSION PRODUCED BY VESTIBULAR STIMULATION IN THE RAT.

David C. Riccio and John S. Thach, Jr. (Kent State U., Ohio and Naval Aerospace Med. Inst., Pensacola, Fla.).
Journal of the Experimental Analysis of Behavior, vol. 11, Jul. 1968, p. 479–488. 11 refs. NASA supported research.

Seven rats were trained to stable performance levels on either Fixed Ratio 47, Variable Ratio 47, Variable Interval one min., or Fixed Interval one min. schedules of food reinforcement. Subjects were then tested for sensitivity to vestibular stimulation from rotation, using an ascending method of limits technique with increments in velocity of one revolution/min. every five min. Centrifugal forces were minimized by locating the test chamber over the axis of rotation. Response rates decreased in all subjects as a function of increasing rotation speed. In addition, characteristic differences in the patterns of response decrement were found between subjects on ratio and on interval schedules. Repeated tests indicated high intra-subject reliability in sensitivity to rotation. Similarities of these data to "motion sickness" phenomena in other species were noted. It is suggested that this behavioral approach provides a sensitive and quantifiable technique for assessing the effects of vestibular stimulation in animals.

A68-81934
TOPOGRAPHY OF THE HUMAN MOTOR POTENTIAL.

Herbert G. Vaughan, Jr., Louis D. Costa, and Walter Ritter (Albert Einstein Coll. of Med., Saul R. Korey Dept. of Neurol., Bronx, N. Y.).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 1–10. 18 refs.
Grants PHS MH-06723 and PHS NB-03356.

The motor potential (MP) accompanying voluntary movements is maximal over Rolandic cortex and shows a somatotopic distribution for contractions of various muscles similar to that obtained by cortical stimulation. The MP field distribution was shown to be compatible with its generation by a source of comparable size to the excitable motor cortex. The late component of the somato-sensory evoked response (SER) elicited by peripheral nerve stimulation had a similar distribution, but extended slightly posterior to that of the MP. These differences in distribution between the SER and the P2 component of the MP, presumed to represent afferent input from joint and muscle receptors, are attributed to the predominantly post-central projection of the cutaneous afferents which are also activated by electrical stimulation of peripheral nerve.

A68-81935
THE SIGNIFICANCE OF THE CORTEX FOR THE TRAVELLING PHENOMENON OF BRAIN WAVES.

H. Petsche and J. Sterc (Vienna, U., Neurol. Inst., Austria).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 11–22. 32 refs.

In rabbits, the capsula interna and corpus callosum of which were partially or completely destroyed on one side, wave shapes and phase relationships of seizure activity were studied by different sets of cortical multi-electrodes, two mm. apart. It was shown that the seizures in the operated hemisphere were more regular than in the intact side; frequently they consisted of simple or complex spike and wave patterns. The spreading behavior of the seizure waves ("traveling") did not differ, in general on the two sides. Spreading thus does not seem to depend on deep brain structures. Since no synchronized brain wave shows up exactly simultaneously over an extended cortical region, it is suggested that the travelling phenomenon might be closely related to synchronization of brain waves. These experiments demonstrate that the cortex by itself may be able to produce spike and wave patterns and that brain-stem structures are not necessarily involved.

A68-81936
ALPHA BLOCKING DURING VISUAL AFTER-IMAGES.

Peter Eberlin and Dean Yager (Brown U., Psychol. Dept., Providence, R. I.).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 23–28. 6 refs.

Three subjects observed visual after-images while simultaneous recordings were made of the occipital electroencephalogram. According to instructions, the subjects either observed the after-images attentively, ignored the after-images or searched for traces of after-images when none were present. Alpha blocking was greatest under the condition of attentive viewing of after-images, at a medium level under conditions of searching in the absence of after-images, and least when the after-images were ignored. The

effect of after-images and attention together was greater than the sum of the two factors separately, indicating a positive interaction between after-images and attention in blocking alpha rhythms.

A68-81937
DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF THE NERVOUS SYSTEM.
O. Appenzeller and A. P. Fischer, Jr. (Cincinnati, U., Coll. of Med., Dept. of Neurol. and Veterans Admin. Hosp., Neurol. Serv., Cincinnati, Ohio).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 29–35. 9 refs.

Rapid eye movements during paradoxical sleep was studied in nine patients with lesions of the nervous system. When nystagmus is present while the patient is awake, this nystagmus can also be seen to accompany rapid eye movement (REM). Palsies of voluntary gaze abolish REM toward the paralyzed side. Some patients who have recovered from gaze palsies may have REM only toward the previously unaffected side. In patients with severe chronic Wernicke–Korsakoff's disease, REM may be absent presumably due to affection of the vestibular nuclei. These findings support those in animals where lesions of vestibular nuclei have been shown to abolish REM. In animals the visual cortex was found to be facilitatory whereas the frontal cortex inhibitory on REM and this is probably also true for man because of the marked depression of REM in patients with visual cortex lesions which presumably allowed excessive frontal inhibitions of REM.

A68-81938
CORTICAL TEMPERATURE DURING PARADOXICAL SLEEP IN THE MONKEY.
Martin L. Reite and G. Vernon Pegram (6571st Aeromed. Res. Lab., Holloman AFB, N. Mex.).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 36–41. 16 refs.

Cortical temperature was measured with subdural thermistors during waking and sleep in eight *Macaca mulatta* monkeys. A normal diurnal curve was present, and during the day periods of heightened arousal were associated with temperature increases. During the night periods of restlessness or awakening were associated with temperature increases, the temperature decreasing as the animal returned to sleep. Rapid eye movement (REM) sleep was most often associated with decreases in cortical temperature, irrespective of whether the animal entered REM sleep from non-REM sleep or from waking. In general, thermistors posterior to the central sulcus or over temporal cortex recorded statistically significant temperature decreases during REM sleep, whereas thermistors over frontal cortex recorded either significant decreases or no significant change with REM. No recording sites showed significant temperature increases during REM sleep. It is suggested that these results represent increased cortical blood flow during REM sleep, and that cortical blood flow during REM sleep may exceed flow during non-REM sleep, quiet waking or intense arousal.

A68-81939
FREQUENCY-FOLLOWING (MICROPHONIC-LIKE) NEURAL RESPONSES EVOKED BY SOUND.
F. G. Worden and J. T. Marsh (Calif., U., Center for Health Sci., Brain Res. Inst. and Dept. of Psychiat., Los Angeles).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 42–52. 22 refs.
Grant PHS MH 03831.

An acoustically evoked response is described which reproduces the frequency and wave form of the stimulus. This frequency-following response (FFR) is recordable from gross electrodes in the central auditory pathway. The FFR differs from an acoustic stimulus of graded onset, and the cochlear microphonic response (CM), in that it has a sharp onset, a latency appropriate to the locus from which it is recorded, an amplitude burst at the onset and a decrement of amplitude over time. The frequency range of FFR increases with stimulus intensity. At 80 db. sound pressure level the range is approximately 500–5,000 c.p.s. For recordings from the cochlear nucleus these frequency limits are not influenced by Nembutal anesthesia. The wave form and amplitude of FFR vary with stimulus frequency and with laterality of stimulus input. In contrast to the auditory evoked potential, which can be recorded widely in the brain, FFR is recordable only within, or close to, the auditory pathway. It was observed only at, and below the level of the inferior colliculus. FFR has implications for the neurophysiology of hearing which are different from those of the auditory evoked potential. Some of these are discussed.

A68-81940
CROSS-CORRELATION OF ELECTROMYOGRAMS SHOWING INTERFERENCE PATTERNS.
R. S. Person and L. P. Kudina (USSR, Acad. of Sci., Inst. of Higher Nervous Activity and Neurophysiol., Moscow).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 58–68. 26 refs.

Cross-correlation analysis of two electromyograms (EMG) led off from the same muscle revealed synchronization of motoneuron discharges during fatigue or intense contraction, and also as an aftereffect of poliomyelitis. The results tally with the data described in the literature obtained by other methods. Cross-correlation analysis, however, showed that, in contrast with widespread opinion, asynchronous activity of motoneurons in healthy subjects takes place only during very weak contraction. The greater the intensity of the contraction, the greater the synchronization. Cross-correlation analysis of the EMG of antagonistic muscles revealed that during a voluntary isometric contraction of both there was no correlation. During a voluntary contraction of one of them (holding a load), when the other muscle showed a weak involuntary activity, correlation between the two EMG was pronounced. In patients after poliomyelitis and in cases of hemiparesis correlation was also observed during voluntary contraction of both muscles. In certain cases the maximum correlation has a constant delay of 4 to 11 msec. (the involuntarily contracting muscle being late). Between EMG of contralateral muscles no correlation was ever observed, whatever the type of activity. The authors consider that it is the balance of several synchronizing and desynchronizing factors which determines the level of synchronization in each case.

A68-81941
AN INVESTIGATION OF AUDITORY EVOKED RESPONSES OF MENTALLY RETARDED ADULTS DURING SLEEP.
R. H. Nodar and James T. Graham (Mich. State U., Dept. of Audiol. and Speech Sci., East Lansing and Purdue U., Dept. of Audiol. and Speech Sci., Lafayette, Ind.).
Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 73–76. 14 refs.
Grant NSDCP N1601.

Computer averaged EEG responses were examined for 1,000 c.p.s. tone when ten mentally retarded (MR) adults and five normal adults were tested awake and during sleep. The results indicated a high degree of similarity for MR and normal responsiveness when tested in the sleeping condition. More interesting, however, was the apparent tendency of the latency characteristics of the responses for both groups to be more similar for sleep than for the waking state.

The results suggest that: (1) electroencephalographic audiometry using computer averaging techniques may be a feasible procedure for assessing the hearing level of sleeping moderate functioning MR adults; and (2) the latency of auditory evoked responses recorded from sleeping subjects is not a function of their intellectual capacity.

A68-81942
THE EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN THE CAT.

Robert N. Straw (The Upjohn Co., Dept. of Pharmacol., Kalamazoo, Mich.).

Electroencephalography and Clinical Neurophysiology, vol. 25, Jul. 1968, p. 69–72. 13 refs.

The duration of cortical after-discharge in cats paralyzed with gallamine triethiodide (five mg./kg.) was significantly longer than that recorded in the non-paralyzed state. A similar prolongation of seizure duration was observed following spinal cord transection. No increase in duration was recorded when gallamine triethiodide (five to 20 mg./kg.) was administered in an *encephale isole* preparation. In contrast, when the cats were paralyzed with decamethonium bromide (one mg./kg.), no increase in cortical after-discharge duration was observed. However, spinal cord transection in an acute preparation paralyzed with decamethonium bromide, significantly prolonged the seizure duration. These data suggest that cortical after-discharge duration is influenced by mechanism(s) of spinal or peripheral origin.

A68-81943
ROLE OF SOME PARTS OF THE NERVOUS SYSTEM AND ENDOCRINE GLANDS IN THE DEVELOPMENT OF NONSPECIFIC RESISTANCE OF ORGANISM [O ROLI NEKOTORYKH OTDELOV NERVNOI SISTEMY I ENDOKRINNYKH ZHELEZ V RAZVITII NESPETSIFICHESKOI SOPROTIVLIAEMOSTI ORGANIZMA].

V. IA. Rusin (Yaroslavl' Pedagogical Inst., Dept. of Human and Animal Physiol., USSR).

Fiziologicheskii Zhurnal SSSR, vol. 54, May 1968, p. 545–553. 12 refs. In Russian.

Studies were made on the effect of various pharmacological agents in female albino rats. Chlorpromazine, reserpine, atropine, dihydroergotoxin, dinitrophenol, barbamile, sodium nitrite, azide and floride were used. These agents selectively inhibited the function of various parts of the nervous system, hypophysis and the adrenals as well as aerobic and anaerobic respiration. The specific and non-specific resistance of the rats was investigated.

A68-81944
FREQUENCY SPECTRA IN VARIOUS BRAIN REGIONS OF RABBIT AND THEIR CHANGES DURING VESTIBULAR AND OPTOKINETIC STIMULI [CHASTOTNYE SPEKTRY BIOTOKOV RAZNYKH OBLASTEI MOZGA KROLIKA I IKH IZMENENIE POD VLIIANIEM VESTIBULIARNYKH I OPTOKINETICHESKIKH RAZDRAZHITELEI].

N. P. Gordeeva and V. A. Ll'ianok (USSR, Acad. of Sci., Inst. of Higher Nervous Activity and Neurophysiol., Moscow).

Fiziologicheskii Zhurnal SSSR, vol. 54, May 1968, p. 539–544. 19 refs. In Russian.

A comparison of frequency spectra of the brain (occipital, sincipital and motor zones of the cortex, reticular formation of the midbrain) in rabbits and humans indicates a similarity in their general pattern. With the increase of frequency the amplitude decreases, then increases and finally gradually decreases. However, in rabbits higher amplitudes are observed at lower frequencies, the differences in the spectra of various brain structures being insignificant. Vestibular and optokinetic stimuli decrease oscillations of all the frequencies with the exception of delta waves which increase in their amplitude.

A68-81945
ROLE OF CELLULAR MECHANISMS IN ADAPTATION OF ANIMAL ORGANISM TO HIGH TEMPERATURES [ROL' KLETOCHNYKH MEKHANIZMOV V ADAPTATSII ORGANIZMA K VYSOKOI TEMPERATURE].

A. IU. IUnusov.

Akademiia Nauk Uzbekskoi SSR, no. 1, 1968, p. 32–37. 10 refs. In Russian.

Data are presented which show that changes in water and electrolyte composition occur in tissues during the adaptation of organisms to high temperatures. In the adaptation process a change in the neurosecretory reaction of the hypothalamus supraoptic nuclei occurs.

A68-81946
ACUTE INTOXICATION WITH HYDROGEN DISULFIDE [OSTROE OTRAVLENIE SEROVODORODOM].

O. M. Chertok (Irkutsk Med. Inst., Clin. of Nervous Disorders, USSR).

Zhurnal Nevropatologii i Psikhiatrii, vol. 68, no. 3, 1968, p. 381–384. 5 refs. In Russian.

Twenty-nine workers with acute hydrogen disulfide intoxication were studied. The patients were divided into three groups: (1) light intoxication; (2) moderate intoxication; and (3) severe intoxication. In light intoxication the following symptoms were seen; headaches, vertigo, a feeling of fainting, breathing difficulty, nausea (sometimes with vomiting), photophobia, eye pains, short time unconsciousness, convulsions and moderate vegetative disturbances. On the following day these symptoms disappeared, the patients felt improved and returned to work in a few days. In cases of moderate intoxication, the same symptoms were evident but to a greater degree. Loss of consciousness lasted for up to 30 min. Afterwards headaches, weakness, apathy, paleness and loss of appetite were reported. Heart rate, heart sounds and blood pressure were reduced. A slight asymmetry of the nasa-labial folds occurred. The tendon reflexes were higher or slightly lower, pathological reflexes were absent, and there were no changes in the sensorium. In most cases there was increased perspiration, cold extremities, apathy, inhibition and drowsiness. Leucocytosis occurred and body temperatures were elevated in the evenings. Severe cases of intoxication were characterized by long (up to two days) periods of unconsciousness, disturbed respiration, retrograde amnesia and impaired intelligence. Two patients died and 27 were dismissed from the hospital. A follow-up study showed that all dismissed patients were working. It was concluded that even in cases of severe intoxication, full recovery can occur and the patient can be restored to full working capacity.

A68-81947
A METHOD OF EVALUATING LARGE NUMBERS OF SYSTEM ALTERNATIVES.

Robert Sadacca and Robert T. Roots (U.S. Army Personnel Res. Office, Washington, D. C.).

Human Factors, vol. 10, Feb. 1968, p. 5–10.

This paper outlines a method for combining alternatives for each of the factors bearing on a design decision and rank ordering all possible configurations of alternatives. The method permits the rank orderings to be based on the judgments of a relatively large number of persons having diverse points of view and experience but concerned with a common design problem. This method was used to rank order a large number of alternative

reporting techniques that might be utilized within a context of a computer-based tactical image interpretation facility for each of four man-computer communication tasks. Results from the application of this method were compared with a scaling of stimuli using Thurstone's law of categorical judgment technique and with the results of a related experimental study.

A68-81948
THE EFFECT OF SIGNAL RATE ON PERFORMANCE IN TWO KINDS OF VIGILANCE TASK.
Jane F. Mackworth (Radcliffe Inst., Cambridge, Mass.).
Human Factors, vol. 10, Feb. 1968, p. 11–17. 23 refs.

Signal rates of 180 or 30/hr. were presented to 80 subjects in two kinds of vigilance task, the Continuous and the Jump Clocks. In the former, signals were brief pauses in the steady movement of the clock hand, and in the latter they were double jumps of the clock hand. The signal rate had little effect on the percentage of signals detected but more false alarms were given at the slow signal rate, so that the detectability (d) or sensitivity for the signals and the criterial level (beta) tended to be lower. The Continuous Clock was its high required rate of observing showed significant decrements in d' during the session, but the Jump Clock did not. Increases in beta during the session were greater with the fast signal rate. The results are discussed in terms of habituation and observing behavior.

A68-81949
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AN AUTOMOBILE SIMULATOR.
Gerald V. Barrett (Goodyear Aerospace Corp., Akron, Ohio), Minoru Kobayashi, and Bernard H. Fox.
Human Factors, vol. 10, Feb. 1968, p. 19–26.

An experiment was conducted to determine the feasibility of studying driver reaction to sudden pedestrian emergencies in an unprogrammed automobile simulator. A random sample of 11 male subjects followed an identical procedure. Each subject went through a speed estimation study which was designed so that the subject would drive past the shed containing the pedestrian (dummy) 11 times. This was done so that the emergence of the pedestrian would be completely unsuspected. The subject drove in the right lane of the road at approximately 25 m.p.h. When the subject was 82.5 ft. from the shed containing the pedestrian, a microswitch was tripped which released the dummy into the center of the road at a controlled rate. During the study a continuous record of speed, time, brake position, steering wheel position, lateral position of vehicle, longitudinal position of vehicle, and position of pedestrian was recorded. All of the subjects tried to avoid the pedestrian, either by brake application or by a steering change. Since this was a feasibility study with a small sample, no conclusions were drawn beyond the data, but the possibility of productive research in this area using simulation techniques seems to have been opened up.

A68-81950
THE ESTIMATION OF VEHICULAR VELOCITY AS A FUNCTION OF VISUAL SIMULATION.
Santo Salvatore.
Human Factors, vol. 10, Feb. 1968, p. 27–31.

This study reports an investigation of the ability of subjects to estimate the velocity of the vehicle in which they travel. The experiment restricted sensory stimulation to the visual modality. The factor of interest is locus of retinal stimulation. Velocity and acceleration were the other variables. Time of observation was held constant to one sec. Results show that the locus of retinal stimulation is significant in determining the accuracy of the estimates. Peripheral visual stimulation results in more accurate estimates of velocity than frontal visual stimulation. The acceleration of the vehicle alters the results.

A68-81951
IMPROVING TIME-SHARING PERFORMANCE OF PILOTS THROUGH TRAINING
Richard F. Gabriel and Alan A. Burrows (Douglas Aircraft Co., Aircraft Div., Long Beach, Calif.).
Human Factors, vol. 10, Feb. 1968, p. 33–40. 6 refs.

Even with special display devices in gestation, a pilot must satisfy his complete visual information needs by "time-sharing" between the intra- and extra-cockpit data sources. A sample of 60 military attack pilots, selected with the variable of flying experience in view, was divided into control and trainee groups. Using simple, generalized but adaptive simulation devices, the trainee group was trained over an eight-wk. period in display reading and in hazard detection. A comparison of the trainee group with the control group in a highly specific and complex simulated flying task, showed that hazard detection (such as collision) was improved significantly without in any way compromising other flying tasks.

A68-81952
HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS.
Isaac Debotten (Bendix Corp., Navigation and Control Div., Teterboro, N. J.).
Human Factors, vol. 10, Feb. 1968, p. 41–51. 5 refs.

A photographic method is presented which can determine flight parameters, and many measures of the quality of an electronic Head-Up Display which uses Microvision[R1] and an electronic horizon as real world information. In conjunction with pilot input factors and pilot acceptance and evaluative factors which can be obtained through other means, there are enough parameters to relate the quality of the display to good flight performance. One method proposed involves the taking of motion pictures through the head-up display while the pilot is using it to fly the airplane. With the use of a film reader, the x and y coordinates of 12 points are obtained as the raw data. This, in turn, through simplified approximate formulas, can be converted to flight parameters and quality of the display which, in turn, can be related to flight performance.

A68-81953
ENERGY CONSIDERATIONS AS DETERMINANTS OF SYSTEM DESIGN.
Irving Streimer (San Fernando Valley State Coll., Northridge, Calif.).
Human Factors, vol. 10, Feb. 1968, p. 53–56. 23 refs.

The paper developes a methodological approach to the sizing of man-machine systems which is predicted upon the efficiency of conversion of available system energy into useful goal directed work. Systems are generically categorized into two classes as a function of their energy replacment characteristics. Four classes of energy conversion efficiency degradations are delineated which can adversely affect system capability, reliability and cost. The effects of alterations in operator performance characteristics upon system design are detailed in terms of engineering changes, and suggestions are advanced as to the nature of the future research necessary to obtain maximum cost effectiveness in future systems.

A68-81954
INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH THE USE OF COMPUTER TECHNIQUES.

Wilton W. Murphy, Keith A. Krusemark, and Ronald W. Moyer. *Human Factors*, vol. 10, Feb. 1968, p. 57–62.

The cost of space and oceanic missions per man hour of effective crew activity is extremely high. Vehicle operations and basic crew requirements frequently leave only a small percentage of the crew time available for experiments and data collection. To make optimum use of this time and simultaneously eliminate the laborious manual task of crew scheduling, an automated Crew Activities Scheduling Program (CASP) has been developed, and is described. This program gives consideration to vehicle operations, work/rest cycles, geophysical events, experiments, and other crew functions, as well as the associated constraints. Rapid and convenient means are provided for trade-offs, rescheduling and parametric analysis of crew involvement. Typical computer printouts of detailed crew scheduling data are presented.

A68-81955
A RED-GREEN PARADOX?

H. Jerry Lavender, Jr. (Gen. Dyn. (Electron.), Rochester, N. Y.) and Raymond M. Ekstron (Lockheed–Marietta, Marietta, Ga.).
Human Factors, vol. 10, Feb. 1968, p. 63–65.

Because of the probability of human error in interpretation of color coding from a system versus component standpoint, a pilot study was conducted to determine the extent/presence of color confusion. Results were not significant. There did, however, seem to be confusion in the use of red and green regarding the philosophy of system versus component. The need for further investigation was evident.

A68-81956
HUMAN FREQUENCY RESPONSE AS A FUNCTION OF VISUAL FEEDBACK DELAY.

John M. Leslie and David A. Thompson (Stanford U., Palo Alto, Calif.).
Human Factors, vol. 10, Feb. 1968, p. 67–77. 20 refs.

This paper uses a light-matching tracking study to determine the human frequency band pass characteristics in the presence of significantly large external transmission delays which are introduced into the stimulus-response information loop. Such delays occur in real time operation of vehicles and other equipment which is at some distance from the operator (near earth or deep orbit, surface of the moon, etc.). When information in the visual sensory channel is delayed because of transmission times between man's controlling action and the displayed results, this interacts with the relatively short normal delay of the other sensory feedback loops such as tactual and kinesthetic information loops, causing substantial phase interference problems between otherwise in-phase parallel sensory information channels. A representative model was used for the human transfer function for the system studied, which matched the experimental data reasonably well. The maximum frequency at which a person could meaningfully accept and act on random inputs (where the cut-off point was defined as the three db. down point) is $f_{co} = 0.16/(T+0.15)^{0.85}$ for a T second transmission

A68-81957
A SYSTEM OF NOTATION AND MEASUREMENT FOR SPACE SUIT MOBILITY EVALUATION.

John A. Roebuck, Jr. (North Am. Aviation, Inc., Downey, Calif.).
Human Factors, vol. 10, Feb. 1968, p. 79–93. 24 refs.

An integrated system of mobility notation and standard techniques for measurement of spacesuit mobility is described. New terminology is proposed to describe human body movements for engineering workspace analysis and suit mobility specifications. Vector and link concepts are combined in a simplified model of man to describe body positions in terms of orientation of limbs with respect to a tri-planar angular coordinate system conceived as attached to the pelvic region. Numerical coding of the body links and joints is described. The notation system may be used as a basis for mathematical modeling for computer analysis of vehicle work-space geometry and control locations. The system is independent of gravitational reference semantic implications and sufficiently general for a wide range of complexity in kinesiological, medical and human engineering applications.

A68-81958
OPTIMIZATION OF THE OXYGEN TRANSPORT SYSTEM.

B. Pennock and E. O. Attinger (Va. U., Div. of Biomed. Eng., Charlottesville and Pa., Presbyterian U., Med. Center, Res. Inst., Philadelphia).
Biophysical Journal, vol. 8, 1968, p. 879–896. 24 refs.
Grant NIH HE-09694.

Emphasizing the over-all performance of the O_2 transport system, as well as the interactions between its various subsystems, a method for a parametric performance analysis has been developed. The purpose of such an analysis is three-fold: (1) it permits an evaluation of those parameters which are critical for the performance of the system under conditions of stress; (2) it leads to an assessment of the ranking of individual members within the hierarchy of biological control systems; and (3) it permits an objective assessment of the severity and prognosis of cardiovascular and respiratory diseases and of the degree of disability resulting therefrom. Starting with the principle of conservation of mass, two equations are derived which express the balance of oxygen in terms of supply, consumption and waste. These equations are then developed in terms of the parameters of the system; namely, ventilation, inspired O_2 concentration, cardiac output, O_2 capacity of the blood, energy requirements of the two pumps, fractional extraction of O_2 from alveolar air (ventilation-perfusion ratio) and the oxygen utilization fraction in the periphery. The results indicate that the normal system attempts to maximize the oxygen utilization fraction while minimizing ventilatory and cardiac energy requirements. Changes in the ventilation-perfusion ratio are relatively less important. Possible extensions of the model are discussed.

A68-81959
VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS.

A. F. Cobbold, D. Megirian, and J. H. Sherrey (Tasmania, U., Fac. of Med., Dept. of Physiol., Hobart, Australia).
Archives Italiennes de Biologie, vol. 106, May 1968, p. 113–123. 22 refs.
Grants PHS NB-07195-01 and ARGC 66-15008.

The effects of vestibular afferent volleys, small and large, on the vagal efferent complex and on selected sympathetic motor outflows were examined in cats under chloralose anesthesia. The results showed that two functionally distinct groups of vagal efferent fibers are excited by vestibular nerve stimulation depending upon afferent volley size. Vestibular evoked sympathetic responses of long latency (60–110 msec.) were found to depend on the functional integrity of supraspinal structures. In the case of splanchnic nerve responses, somatic sensory afferent volleys generated the early discharge and large volleys appended the delayed one. The central neuronal organization underlying vestibular evoked discharges in the vagus and in sympathetic motor outflow is discussed.

A68-81960
INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS.

E. Jankowska, S. Lund, A. Lundberg, and O. Pompeiano (Göteborg, U., Dept. of Physiol., Sweden).
Archives Italiennes de Biologie, vol. 106, May 1968, p. 124–140. 19 refs.
Swed. Med. Res. Council supported research.

Electrical stimulation of the caudal brain stem performed on unanesthetized decerebrate cats evokes large inhibitory postsynaptic potentials (IPSP) in both flexor and extensor motoneurons. These effects are mediated by a ventral reticulospinal pathway. The threshold strength required to elicit IPSP in the motoneurons agrees well with that required to produce a just noticeable collapse of the rigidity. In all motoneurons tested the IPSP evoked from the reticular formation reverse during injection of chloride ions. Moreover, in both flexor and extensor motoneurons the current intensities required to reverse the IPSP from the reticular formation are similar to those required to reverse the IPSP evoked from primary afferents. The reticular IPSP is associated with a very large conductance increase and also in this respect there is no difference between flexor and extensor motoneurons. The motoneuronal excitability, tested both with orthodromic synaptic activation and with pulses applied through the microelectrode, is decreased during the IPSP evoked from the reticular formation. There is also a blockage of the antidromic invasion of motoneurons: Evidence is presented suggesting that reticular stimulation through ventral spinal pathways inhibits transmission in interneuronal pathways from cutaneous and high threshold muscle afferents to motoneurons. There is a general discussion of descending inhibitory effects evoked from the bulbar reticular formation.

A68-81961
EXCITABILITY CHANGES ALONG VISUAL PATHWAYS DURING EYE TRACKING MOVEMENTS.
H. Kawamura and P. L. Marchiafava (Pisa, U., Ist. di Fisiol. and CNR, Gruppo Operativo di Neurofisiol., Sez. di Pisa, Gruppo Nazl. di Med. Sper., Italy).
Archives Italiennes de Biologie, vol. 106, May 1968, p. 141–156. 42 refs.
Contract AF 61(052)-830.

During the eye tracking movements of the midpontine pretrigeminal preparation an enhancement of the antidromic response of optic nerve fibers was observed. The enhancement was often accompanied by reduction of postsynaptic activity of lateral geniculate neurons, suggesting that presynaptic inhibition may act at geniculate level. Simultaneously visual cortex evoked potentials were facilitated. These central events do not depend on the presence of eye movements, but are directly caused by the presentation of the moving visual stimulus.

A68-81962
A STUDY OF THE CONTROL OF CEREBRAL BLOOD FLOW IN THE FREELY MOVING RABBIT.
J. Seylaz and L. Molnar (Paris, U., Fac. des Sci., Lab. de Physiol. Gén., France).
Archives Italiennes de Biologie, vol. 106, May 1968, p. 157–164.

The correlations between systemic blood pressure and cerebral blood flow as well as between electrical activity of the brain and cerebral blood flow were studied in the waking rabbit. Cerebral blood flow was found to be, to a high degree, independent of the fluctuations of blood pressure. There was no direct relationship between the changes of electrical activity of the brain and cerebral blood flow. In barbiturate anesthesia or in a state of exhaustion, cerebral blood flow followed the changes in blood pressure passively. It seems probable that in addition to systemic blood pressure and metabolic changes other factors also play a role in the control of cerebral blood flow.

A68-81963
UNIT SIZE AND INTERPOLATED-TASK DIFFICULTY AS DETERMINANTS OF SHORT-TERM RETENTION.
Philip M. Merikle (Waterloo, U., Ontario, Canada).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 370–375. 9 refs.
Grant NRC, Canada APA-231.

Two groups of 24 subjects recalled five- and six-word units following 0-, 4-, and 8-sec. retention intervals (RI). During the RI, one group added the digits in two-digit numbers while the other group classified the same numbers as high or low and odd or even. Slightly but significantly more words were recalled from six-word units following all RIs. Rate of forgetting was significantly greater for six-word units between 0- and 4-sec. RI, but no rate difference was found between 4- and 8-sec. RI. Neither of these effects of unit size interacted with interpolated-task difficulty. The results were considered to support a rehearsal-capacity interpretation of short-term retention rather than an intraunit interference interpretation, which implies that words from six-word units should become less available than words from five-word units with increases in retention interval.

A68-81964
MOTOR PERFORMANCE ON TEMPORAL TASKS AS A FUNCTION OF SEQUENCE LENGTH AND COHERENCE.
Don Trumbo, Merrill Noble, Frank Fowler, and James Porterfield (Kan. State U., Manhattan).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 397–406. 11 refs.
NASA Grant-NsG 606 and Grant AFOSR 526-64.

Two experiments on pursuit tracking of temporal patterns are given in which the effects of the coherence and the length of the patterns are described, both for outcome performance scores and indexes of response organization. In the first experiment, both eye movements and manual control movements were recorded continuously for selected trials. Integrated error scores showed little improvement relative to a random pattern except for the shorter and most coherent patterns. Eye and hand movements were highly coordinated in time but both showed a range effect, leading targets of long duration while lagging short-duration targets. Experiment II provided further evidence on the length-difficulty relation, supporting the evidence from verbal learning that increases in length do not disproportionately increase difficulty.

A68-81965
AVERAGING OF SPACE AND NUMBER STIMULI WITH SIMULTANEOUS PRESENTATION.
Norman H. Anderson (Calif., U., San Diego).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 383–392. 9 refs.
Grant NSF GB 3913.

Subjects received sets of three-digit numbers or linear arrays of dots with instructions to estimate a central tendency. Each set consisted of two compact groups of stimuli, of varied size and separation. Responses were fairly accurate though there was a general tendency to overweight the outlier group of numbers, and a partial tendency to underweight the outlier group of dots. The main purpose of the experiments was to test an elementary averaging model. This model showed promise for the Number data, but there were some moderate, systematic discrepancies for the Space data. A straightforward generalization of the model appeared to provide a good semiquantitative account of the Space data.

A68-81966
SENSORY TRACES VERSUS THE PSYCHOLOGICAL MOMENT IN THE TEMPORAL ORGANIZATION OF FORM.
Charles W. Eriksen and James F. Collins (Ill., U., Urbana).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 376–382. 15 refs.
Grants PHS MH-1206 and PHS K6-MH-22,014.

Visual stimuli were constructed so that any given stimulus by itself appeared to be a random collection of dots. However, when two corresponding stimuli were superimposed by means of a

two-field tachistoscope, a three-letter nonsense syllable was perceived. When a temporal interval was introduced between the presentation of the corresponding stimulus halves, organization in perception was found to be a decreasing function of interstimulus interval over a range in excess of 100 msec. The applicability of a concept of a decaying sensory trace in accounting for the integration of form perception over time was investigated. Clear evidence of a decaying sensory trace was found; however, this concept was unable to account for all aspects of the data. The applicability of a psychological moment acting in conjunction with a decaying sensory trace was considered as was also the possibility of discontinuity detectors which inhibit or break up temporal organization.

A68-81967
A NEGATIVE CONTRAST EFFECT OF REWARD DELAY IN DIFFERENTIAL CONDITIONING.
Richard G. Beery.
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 429–434. 13 refs.
Grant NIMH MH-32,918-02 and NASA supported research.

Rats were run in a differential conditioning paradigm to assess contrast effects of reward delay. The groups were designated: 1-5, 1-10, 5-10, 1-1, 5-5, and 10-10, where the first numeral in each case indicated the length of delay (sec.) in the shorter delay alley (S +), and the second, the length in the longer delay alley (S −). Forty-seven subjects were run, with eight subjects per group in all but Group 5-10. The results on both starting and running speed measures closely paralleled the typical findings from studies of reward magnitude contrast effects. Thus no evidence was found for a positive contrast effect, while some clear examples of a negative contrast effect emerged. The results were discussed in terms of an inhibitory model.

A68-81968
REPETITION EFFECT AND SHORT-TERM MEMORY.
Marilyn C. Smith (Toronto, U., Canada).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 435–439. 11 refs.
Grants NRC APA 191 and DRB 9401-38.

Two experiments are reported which attempted to determine the basis of the "repetition effect," i.e., the observed shorter reaction time (RT) for repeated events than for nonrepeated events. The first experiment was designed to determine whether the effect was due primarily to peripheral response facilitation, or primarily to more central coding effects. By employing a condensing task in which the same response was made to two different stimuli, it was concluded that the effect was not due to peripheral response facilitation, but appeared to be more central in origin. The second experiment tested the hypothesis that the repetition effect resulted from short-term activation of the S–R memory trace. Some support was found for this prediction. It was found that the repetition effect declined with increasing intertrial interval (ITI) over a range in which decline in short-term memory (STM) is typically reported, and that RT for both repeated and nonrepeated events increased with increased ITI, indicating that increased fading of the memory trace occurred in both conditions.

A68-81969
TWO-CHOICE DISCRIMINATION LEARNING AS A FUNCTION OF STIMULUS AND EVENT PROBABILITIES.
Jerome L. Myers and Donna Cruse (Mass., U., Amherst).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 453–459.
Grants NIH MH-03803-06 and NSF GS-386.

One hundred and eighty subjects were run in a two-choice discrimination task with $\pi_1 = .85$ for all subjects. The groups differed with respect to π_2 (.83, .50, .15) and β (.75, .50, .25). P (A_1/T_1) was lowest at $\pi_2 = .50$, the effect being most pronounced at $\beta = .25$. Marked overshooting occurred on both Type one and Type two trials in several groups. The effects of response-event outcomes on subsequent responding varied over values of π_2. These results were discussed with respect to Atkinson's observing response model.

A68-81970
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT CUE IDENTIFICATION.
Dominic W. Massaro, Joseph Halpern, and John W. Moore (Mass., U., Amherst).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 474–482. 10 refs.
NASA Grant NSG(T)-137.

Cue similarity and reinforcement schedule were covaried in two experiments (total N = 408) utilizing a two choice discriminative event prediction task with and without overt cue identification. $P(A_1/S_1)$ was a linear function of $\pi_2 = P(E_1/S_2)$ when the cues (pure tones) were highly confusable and a U-function when S_1 and S_2 were highly discriminable. $P(A_1/S_1)$ was independent of π_2 and did not differ from $\pi_1 = P(E_1/S_1)$ at the intermediate level of cue similarity, suggesting that, in order to predict probability matching, models of discrimination learning require some degree of confusability between S_1 and S_2. Subjects tended to shift their event prediction response whenever they shifted their identification response from that of the previous trial and to shift their cue identification following an incorrect event prediction. The conditional probabilities found when $\pi_1 = 1-\pi_2$ could be predicted by redefining the task as a stimulus learning rather than a response learning problem.

A68-81971
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORMS AND NONDIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING.
Thomas L. Bennett and Henry C. Ellis (N. Mex., U., Albuquerque).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 495–500. 9 refs.
Grant NSF GB-3432.

Forty-eight rats were preexposed to circles and triangles in an otherwise visually sparse environment, with opportunity to manipulate the forms and nondifferential reinforcement being covaried during preexposure. Subjects allowed to manipulate the forms performed superior to those not allowed to manipulate in a subsequent discrimination-learning task, when both groups received concurrent nondifferential reinforcement. Manipulation of the forms in the absence of nondifferential reinforcement produced no effect. Subjects receiving nondifferential reinforcement showed superior performance to those who received experience alone. The findings: (a) question the adequacy of an "attention-getting" hypothesis to account solely for differences in transfer effects of studies using two- and three-dimensional stimuli; and (b) require differentiation theory to provide an account of the effects of nondifferential reinforcement.

A68-81972
REACTION TIME IN THE DETECTION OF VIBROTACTILE SIGNALS.
George A. Gescheider, Michael B. Evans (Hamilton Coll., Clinton, N. Y.), and John H. Wright (Va. Polytech. Inst., Blacksburg).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 501–504.
Grant PHS NB-07620.

Three subjects made judgments of the presence of a burst of 200 c.p.s. vibration on the index fingertip. The probability of subject's reporting the presence of a signal was found to be influenced by the probability of signal occurrence and signal intensity. A family of receiver-operating characteristic curves describing the effects of signal probability on response probability for each signal intensity level was interpreted as support of the applicability of signal detection theory to the judgment of cutaneous stimuli. Manipulation of signal intensity and signal probability also led to changes in subject's reaction time for saying "yes" and for saying "no" when the signal was present and when it was absent, supporting the conclusion that subject's decision time was longer the closer on the sensation continuum a particular sensory observation was to his criterion.

A68-81973
SPATIAL ENCODING STRATEGIES IN SEQUENTIAL SHORT-TERM MEMORY.
Richard A. Monty (U. S. Army Human Eng. Labs., Aberdeen Proving Ground, Md.).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 506–508.

Keeping-track performance was examined as a function of cues designed to control the spatial encoding strategies adopted by subjects. Spatial organization of the material to be remembered significantly affected short-term retention and interacted with the characteristics of the type of stimulus materials employed, demonstrating that visual encoding can play an important role in short-term memory.

A68-81974
ROC CURVES FOR DISCRIMINATION OF LINEAR EXTENT.
C. Douglas Creelman and Wayne Donaldson (Toronto, U., Canada).
Journal of Experimental Psychology, vol. 77, Jul. 1968, p. 514–516.
Contract NONR-4010(03) and Grants PHS MH12,140, and NRC, Canada NRC-APB-111.

Receiver Operating Characteristics were obtained for identifying one of two possible lines as the longer of the pair, for two different pairs, and for two different levels of monetary payoff. A priori probability was varied between experimental runs at 11 different levels. Monetary reward affected criterion, but did not affect detectability; and contrary to an earlier report, a priori probability did not affect measured discrimination. The data suggest that a decision criterion was set to match response proportions to the a priori stimulus probability.

A68-81975
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA IN HYPOXIA [VPLYV ASKORBINOVOI KYSLOTY NA OKYSNE FOSFORYLIUVANNIA V MITOKHONDRIIAKH HOLOVNOHO MOZKU PRY HIPOKSII].
M. M. Epshtein, V. O. Nikonova, and Z. I. Spilioti (O. O. Bohomolits Kiev Med. Inst., Dept. of Biochem., UkrSSR).
Ukrains'kyi Biokhimichnyi Zhurnal, vol. 40, no. 2, 1968, p. 131–134. 9 refs. In Ukrainian.

It is shown that under conditions of oxygen insufficiency the phosphorylation intensity in rat brain mitochondria decreases and oxygen consumption decreases to a lesser degree. Thus, the conjunction of oxidation and phosphorylation is broken. The preliminary introduction of ascorbic acid to animals subjected to hypoxia results in an increase of oxygen absorption and esterification of inorganic phosphorus. The introduction of ascorbic acid, however, does not equalize the ratio between respiration and phosphorylation broken by hypoxia (P/O in hypoxia is 1.24 $\pm$ 0.5; in hypoxia with preliminary introduction of ascorbic acid it is 1.17 $\pm$ 0.05).

A68-81976
ROLE OF CORTICOSTEROIDS IN THE REACTION OF THYROID GLAND AND BRAIN NORADRENALIN TO COLD STRESS [O ROLI KORTIKOSTEROIDOV V REAKTSII SHCHITOVIDNOI ZHELEZY I NORADRENALINA MOZGA NA KHOLODOVOI STRESS].
E. V. Sokolova and V. G. Shaliapina (I. P. Pavlov Inst. of Physiol., Leningrad, USSR).
Ukrains'kyi Biokhimichnyi Zhurnal, vol. 40, no. 2, 1968, p. 173–176. 16 refs. In Russian.

The effect of cold was studied on the content of noradrenalin in the brain and of protein bound iodine in the plasma of rat blood at various contents of corticosteroid hormones. The intact rats, which preliminarily received cortisone and were adrenalectomized, were kept during the day at 4°C. The cold effect in the intact rats decreases the content of noradrenalin in the brain by 9.8 p.c. and increases the level of protein bound iodine to 126 p.c. Preliminary administration of cortisone prevents the decrease of noradrenalin content caused by cold and still more activates the function of the thyroid gland. Adrenalectomy results in the exhaustion of noradrenalin reserved by 31.5 p.c. and decreases the content of protein bound iodine by 25 p.c. The substitution therapy by suprarenal hormones does not reduce the content of noradrenalin in the brain of adrenalectomized rats affected by cold.

A68-81977
EFFECT OF VITAMIN D ON CALCIUM AND PHOSPHORUS CONTENT IN THE ALBINO RAT BONES DEPENDING ON CALCIUM AND FAT CONTENT IN DIET [VLIIANIE VITAMINA D NA SODERZHANIE KAL'TSIIA I FOSFORA V KOSTIAKH BELYKH KRYS V ZAVISIMOSTI OT KILICHESTVA KAL'TSIIA I ZHIRA V DIETE].
K. K. Golikov (USSR, Acad. of Med. Sci., Nutr. Inst., Moscow).
Ukrains'kyi Biokhimichnyi Zhurnal, vol. 40, no. 3, 1968, p. 183–188. 5 refs. In Russian.

Albino rats were kept on diets of 41, 22 and 4.5 p.c. of fat in caloric value and a calcium phosphorus ratio of four to one. Each of three diets involved two groups of animals, one of which received five i.u. of vitamin D_2/day, and the other received no more than 0.128 i.u. The effect of vitamin D on the deposition of calcium and phosphorus in the bones of normal and rachitic animals was found to be dependent on the amount of fat and vitamin D in the diet.

A68-81978
COORDINATION OF MOVEMENTS OF THE EYES AND HAND IN FULFILLING VARIOUS MOTOR TASKS [O SOGLASOVANNOSTI DVIZHENII GLAZ I RUKI PRI VYPOLNENII RAZLICHNYKH DVIGATEL'NYKH ZADACH].
E. K. Berezhnaia (USSR, Acad. of Sci., I. P. Pavlov Inst. of Physiol., Leningrad).
Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Jan.–Feb. 1968, p. 31–37. 13 refs. In Russian.

An investigation was made on the hypothesis: (a) the visual system controls the working point; and (b) the visual system watches the target of the forthcoming transfer of the hand when carrying out a sequence of pressing keys on the experimental panel. The experiments have shown that in carrying out successive actions, the hand follows a certain course along the panel consisting of a number of pressures on the keys (fixations) and transfers, while the eye movements are made up of a number of jerks and fixation pauses. Fixation of the glance occurs on the same keys of the panel, which are parts of the itinerary of the hand, and thus the whole course on the panel covered by the glance coincides with that covered by the hand. There is a difference between the time the hand and the glance cover individual sections of the sequence. The jerks of the eyes towards the next key begins 206

± 21 msec. before the hand leaves the previous key. In simpler tasks consisting of two pressures and one transfer, the difference amounts to 104 ± 8 msec. It was assumed that a certain amount of visual information relating to the object is required to move the hand to the next object (the key). The assumption is corroborated by the time interval between the beginning of fixation of the eyes on the next key and the moment as the hand leaves the previous key. The interval termed "time reserve" averaged 127 ± 18 msec. The data obtained support the hypothesis of a previous investigator.

A68-81979
PHARMACOLOGICAL ANALYSIS OF VERVOUS MECHANISMS OF TONAL AND VERBAL SIGNALS DISCRIMINATION UNDER CONDITIONS OF NOISE [FARMAAKOLOGICHESKII ANALIZNERVNKH MEKHANIZMOV RAZLICHENIIA SHUMA].

N. N. Traugott, D. A. Kaufman, and L. IA. Balnov (USSR, Acad. of Sci., I. M. Sechenov Inst. of Evolutionary Physiol. and Biochem. and Skvortsov-Sechenov Psychoneurol. Hosp., Leningrad).

Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Jan.–Feb. 1968, p. 45–52. 27 refs. In Russian.

It was found that chlorpromazine, though substantially not affecting auditory sensitivity, impeded discrimination of tonal and verbal signals under conditions of noise. Sodium-amytal did not change the absolute auditory thresholds, but it drastically improved the distinctness of speech sounds and, to a lesser degree, of tonal signals. Diethylamide lysergic acid enhanced auditory sensitivity, and at the same time hindered detection of speech and tonal signals from noise. Tophranil was likewise capable of improving auditory sensitivity, and it often improved the distinctness of speech during noise, particularly when it had been impeded before the administration of the drug. On the whole, the data obtained showed that drugs, which slightly affect the specific afferent system, but selectively change the activity of non-specific brain structures may change identification of verbal and tonal signals under conditions of noise. Suggestions were made concerning mechanisms underlying the phenomena and a special nervous mechanism controlling the degree of the masking of noise.

A68-81980
CHANGE OF BACKGROUND EEG IN DOGS UNDER THE ACTION OF ACOUSTIC STIMULI OF DIFFERENT INTENSITY [IZMENENIE FONOVOI ELEKTROENTSEFALOGRAMMY SOBAK POD VLIIANIEM ZVUKOVYKH RAZDRAZHITELEI RAZLICHNOI INTENSIVNOSTI].

N. N. Kudriavtseva (USSR, Acad. of Med. Sci., Inst. of Exptl. Med., Leningrad).

Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Jan.–Feb. 1968, p. 120–125. 6 refs. In Russian.

Changes were shown of background electroencephalograms in dogs under the action of lasting acoustic stimuli. An assumption was made that the changes are related, on one hand, to the orienting response, and on the other, from the development of an inhibitory process which plays a protective role during the action of strong (80 to 90 db.) acoustic stimuli.

A68-81981
ELECTROPHYSIOLOGICAL STUDY OF HUMAN CONDITIONED REACTIONS TO TIME [ELEKTROFIZIOLOGICHESKOE ISSLEDOVANIE USLOVNYKH REAKTSII NA VREMIA U CHELOVEKA].

M. Bonfitto, V. M. Vasil'eva, and L. G. Voronin (M. V. Lomonosov Moscow State U., Dept. of Physiol. of Higher Nervous Activity, USSR).

Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Mar.–Apr. 1968, p. 179–196. 13 refs. In Russian.

The dependence of conditioned reactions to time in man on the length of intervals between rhythmic stimuli and on their quality (indifferent or signal stimuli) was investigated. An interval of 12 to 15 sec. was optimal. Imparting a signal meaning to rhythmic stimuli contributed to the formation of the reaction to time. An assumption was made that at different intervals the role of trace processes, of orienting reactions and of "biological clock" in formation and manifestation of conditioned response to time is not identical.

A68-81982
INFLUENCE OF INTELLECTUAL-EMOTIONAL STRESS ON HEART ACTIVITY [VLIIANIE UMSTVENNO-EMOTSIONAL'NOGO NAPRIAZHENIIA NA DEIATEL'NOST' SERDTSA].

M. M. Karimova (USSR, Acad. of Med. Sci., Inst. of Labor Hyg. and Occupational Diseases, Lab. of Physiol. of Labor, Moscow).

Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Mar.–Apr. 1968, p. 266–271. 18 refs. In Russian.

An electrocardiographic (ECG) examination of interpreters and translators during synchronous, consecutive and written translations showed a sharp pulse acceleration (up to 160 strokes/min.) and unfavorable ECG shifts during a 20 min. synchronous oral translation. A longer electric systole as compared with the normal value combined with a considerable enhancement of the heart rate, progressive decrease in the amplitude of T_2, pronounced discordancy in discordancy in the directions of the change in R_2 and T_2, and concordancy with regard to S_2 and R_2 also occurred. No such changes were recorded in oral consecutive or written translations. The data are interpreted according to the information theory of emotions advanced by a previous worker.

A68-81983
EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS OF CATS TO ELECTRICAL STIMULATION OF THE SUBCORTICAL BRAIN FORMATIONS [DEISTVIE AMINAZINA I TOFRANILA NA POVEDENCHESKIE REAKTSII PRI ELEKTROSTIMULIATSII PODKORKOVYKH OBRAZOVANII GOLOVNOGO MOZGA KOSHEK].

F. A. Levtova and V. B. Slezin (V. M. Bekhterev Leningrad Psychoneurol. Inst., Neurophysiol. Lab., USSR).

Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Mar.–Apr. 1968, p. 272–279. 27 refs. In Russian.

Emotional reactions evoked in cats by means of electrical stimulation of various subcortical brain formations have made it possible to reveal the peculiarities of the influence of chlorpromazine and tophranil on these structures. Chlorpromazine in doses of one to 20 mg./kg. blocks those formations whose stimulation induces emotional reactions, while tophranil (in doses of 0.8 to 12 mg./kg.) stimulates them, and emotional reactions manifest themselves more distinctly. The difference apparently is due to dissimilar sensitivity of different nervous structures to chlorpromazine and tophranil. It may be assumed that the suppression by chlorpromazine of such emotions as discontent, avoidance, rage and fear, and stimulation of the emotions by tophranil are related to the adrenolytic action of the former drug and the adrenosensibilizing action of the latter on the adrenergic structures. Neuropsychotropic drugs smoothed out the dependence of the reactions on the current parameters. The possibility is discussed of explaining the revealed correlations by shifts of physiological lability of nervous formations.

A68-81984
ELECTRICAL SENSITIVITY OF THE EYE UNDER THE ACTION OF AN INTENSIVE PHOTIC STIMULUS [SOSTOIANIE ELEKTRICHESKOI CHUVSTVITEL'NOSTI GLAZA PRI VOZDEISTVII INTENSIVNOGO SVETOVOGO RAZDRAZHITELIA].

V. I. Shostak (S. M. Kirov Mil.-Med. Acad., Dept. of Normal Physiol., Leningrad, USSR).
Zhurnal Vysshei Nervnoi Deiatel'nosti, vol. 18, Mar.–Apr. 1968, p. 339–343. 11 refs. In Russian.

To investigate the changes in the functional state of the conducting and central parts of the human visual analyzer, a study was made of the electrical sensitivity of the eye and the critical frequency of disappearance of a flickering electrical phosphene upon a 15 min. disadaptation with an intensity up to 70 nt and after a short and very bright flash (duration 2.1 msec., intensity 7.10^7 nt). It has been found that in the former case electrical sensitivity diminishes, while the critical frequency (a measure of functional mobility) increases in the process of subsequent dark adaptation. After short superbright flashes, the changes also go into opposite directions, but they are of a phasic nature. The phenomena are probably a reflection of trace processes in the visual analyzer induced by intensive photic stimuli.

A68-81985
MECHANISMS OF ATTENTION [K VOPROSU O MEKHANIZMAKH VNIMANIIA].
T. N. Ushakova (USSR, Acad. of Pedagogical Sci., Inst. of Psychol., Moscow).
Voprosy Psikhologii, vol. 14, Mar.–Apr. 1968, p. 38–49. 22 refs. In Russian.

The paper analyzes experimental data indicative of physiological shifts in analyzers caused by the distribution of subjects' attention on a various number of objects (visual and auditory). The findings are interpreted as a manifestation of the effects of the second signal system impulses varying in their spatial distribution. Data obtained showed that there was an inverse relationship between the number of the points where the second signal system pulses are coming and their intensity and concentration. This relationship exists only within certain limits (six to eight visual and three to four auditory objects). Different possibilities of neurophysiological explanation of the experimental results are considered. A hypothesis of limited dynamogenic influence of the reticular formation is recognized as being more adequate.

A68-81986
STATE OF SYMPATHOADRENAL SYSTEM IN PATIENTS WITH VIBRATION DISEASE [SOSTOIANIE SIMPATOADRENALOVOI SISTEMY U BOL'NYKH VIBRATSIONNOI BOLEZN'IU].
N. A. Makarenko (Krivoy Rog Inst. of Labor Hyg. and Occupational Diseases, USSR).
Vrachebnoe Delo, no. 1, Jan. 1968, p. 94–97. In Russian.

Patients with vibration disease due to local effects showed increased stress of the sympatho-adrenal system manifested in elevated urinary excretion of catecholamines and prolonged constriction of the digital blood vessels in response to cold as compared with healthy subjects. The nervous mechanisms of the deficient vasoconstrictive reactions in response to cold stimuli, prolonged period of vasoconstriction and slow transition from vasoconstriction to vasodilatation are discussed.

A68-81987
AMMONIA IN THE GASTRIC JUICE OF PATIENTS WITH CHRONIC INTOXICATION BY NITRODERIVATIVES OF BENZENE AND ITS HOMOLOGUES [AMMIAK V ZHELUDOCHNOM SOKE U BOL'NYKH S KHRONICHESKOI INTOKSIKATSIEI NITROPROIZVODNYMI BENZOLA I EGO GOMOLOGOV].
E. V. Krylova (Khar'kov Inst. of Labor Hyg. and Occupational Diseases, UkrSSR).
Vrachebnoe Delo, no. 1, Jan. 1968, p. 97–99. In Russian.

In 85 patients with minor and average degrees of chronic intoxication by nitroderivatives of benzene and its homologues, a significant increase of ammonia in the gastric juice has been found in the interdigestion period and both phases of the secretory process. It is suggested that determination of ammonia in the gastric juice may be used for detection of early pathological changes of secretion in patients with chronic intoxication by benzene nitroderivatives.

A68-81988
CIRCADIAN RHYTHMS IN RAT MID-BRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS.
Alexander H. Friedman and Charles A. Walker (Loyola U., Stritch School of Med., Dept. of Pharmacol. and Exptl. Therap., Hines, Ill.).
Journal of Physiology, vol. 197, Jul. 1968, p. 77–85. 30 refs.
Grant PHS 5T1 GM77-08.

The circadian rhythms of rectal temperature and biogenic amine levels in mid-brain and quadate nucleus were measured in normal and adrenalectomized rats adapted to and maintained under fixed illumination cycle. Rectal temperature reaches a peak value between 24.00 hr. and 06.00 hr. during the dark phase of the illumination cycle at a time when motor activity is maximal. In adrenalectomized rats, the pattern is similar but the peak is significantly lower. Highest histamine levels in the caudate nucleus and mid-brain of normal and adrenalectomized rats are found at the time when body temperature and motor activity is maximal. Similarly, caudate nucleus and mid-brain noradrenaline levels reach their peak during the dark phase of the illumination cycle. These levels are significantly different from those found during the light phase of the illumination cycle. The rise in noradrenaline in the mid-brain of adrenalectomized rats however, was not significant. Peak 5 hydroxytryptamine (5-HT) levels in the caudate nucleus of normal rats and the mid-brain of adrenalectomized rats were found to be 12 hr. out of phase with peak values obtained for other parameters that were measured. The significance of these circadian rhythms in relation to states of sleep and wakefulness, general metabolism, and motor activity is discussed.

A68-81989
THE BILIARY-FAECAL EXCRETION OF THYROXINE DURING COLD EXPOSURE IN THE RAT.
A. P. Hillier (Cambridge, U., Physiol. Lab., Great Britain).
Journal of Physiology, vol. 197, Jul. 1968, p. 123–134. 13 refs.

The bilary-fecal route of thyroxine excretion was examined by means of thyroxine labelled with ^{131}I in the thyroidectomized, thyroxine-maintained rat during cold exposure. The rate of excretion of thyroxine into the feces is raised in rats exposed to cold for two wk. and fed *ad libitum* on a high roughage diet. When the fecal volumes of warm- and cold-exposed animals are made similar by controlling the roughage content of the diet the difference in their fecal thyroxine excretion rates is much reduced. Warm- and cold-exposed rats eating the same amount of food excrete thyroxine into the feces at similar rates. Even when warm- and cold-exposed rats excrete thyroxine into their feces at the same rate the cold-exposed animals still show a shorter half-life for blood thyroxine. An acceleration of the rate of loss of thyroxine from the blood is demonstrable in fasting animals with 10 hr. of exposure to cold. Ligation of the bile-duct does not affect this acute response to cold. The amount of thyroxine lost into the bile within the first eight hr. after intravenous injection is similar in warm- and cold-exposed animals. The clearance of thyroxine into the bile is however greater in the cold-exposed animal since the liver is working against a lower level of blood thyroxine. An acceleration of the biliary-fecal route of thyroxine excretion is not the only process at work tending to reduce the biological half-life of thyroxine during cold exposure.

A68-81990
THYROXINE DEIODINATION DURING COLD EXPOSURE IN THE RAT.
A. P. Hillier (Cambridge, U., Physiol. Lab., Great Britain).
Journal of Physiology, vol. 197, Jul. 1968, p. 135–147. 19 refs.

The urniary radio-iodide excretion following injection of [^{131}I] thyroxine and tri-iodothyronine is increased in acutely cold-exposed, thyroidectomized rats. This cold response is demonstrable in animals which are fed or fasted or deprived of both food and water. Cold exposure does not increase the rate of urinary excretion of a tracer dose of radio-iodide. It is concluded that cold exposure accelerates the rate of deiodination of both thyroxine and tri-iodothyronine. It is confirmed that both adrenaline and noradrenaline administered *in vivo* can enhance the rate of thyroxide deiodination. The sympathetic blocking agents guanethidine and bethanidine reduce the extra deiodination of thyroxine induced by cold exposure. Bethanidine was also found to reduce the deiodination of tri-iodothyronine during cold. There is a positive correlation between the deiodination of thyroxine and the urinary catecholamine excretion in the cold-exposed but not the warm-exposed rat. It is suggested that the enhanced deiodination during cold exposure is mediated by the release of noradrenaline from the sympathetic nervous system.

A68-81991
CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION.
B. Delisle Burns and R. Pritchard (McGill U., Depts of Physiol. and Psychol., Montreal, Canada).
Journal of Physiology, vol. 197, Jul. 1968, p. 149–171. 17 refs.
Defense Res. Board and Med. Res. Council, Canada supported research.

The behavior of 26 single neurons was studied in the visual cerebral cortex of the cat's neurologically isolated and unanesthetized forebrain. In a separate series of experiments binocular vision was investigated in five human subjects. Units in the cat's brain were excited by two straight, light-dark edges, projected independently, one upon each retina; these edges were given identical, artificial saccadic movements. The average response of neurons was measured from the post-stimulus-histogram (P.S.H.), which provided the probability of unit-discharge at various times after the pattern movement. The response of cortical neurons to such aligned patterns was always greater than that when one pattern was misaligned by displacement in either direction from its representative district. When the pattern in one eye was inverted, the cell gave less response to aligned than to misaligned patterns. Human subjects, viewing similar inverted patterns through a mirror stereoscope, could only obtain stable fusion with a five-min. arc misalignment of the optic axes.

A68-81992
THE EFFECT OF STIMULUS REPETITIONS AND ALTERNATIONS ON ONE-FINGER AND TWO-FINGER RESPONDING IN TWO-CHOICE REACTION TIME.
Martin Hannes (N. Y., City U., Hunter Coll., New York).
Journal of Psychology, vol. 69, part 2, Jul. 1968, p. 161–164. 5 refs.
Grants PHS MH 07776 and PHS MH 14412.

An experiment was carried out to clarify the role of stimulus repetitions and stimulus alternations on two-choice reaction time. Specifically, the following hypothesis was tested: the effect of stimulus alternations and stimulus repetitions on one-finger and two-finger response systems is different. Twenty subjects were randomly assigned to two groups. Group I subjects responded with one finger and Group II subjects responded with two fingers. The one-finger group was significantly faster ($p < .01$) to stimulus alternations, whereas the two-finger group was significantly faster to stimulus repetitions ($p < .05$). The results were thus consistent with the hypothesis.

A68-81993
EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING.
N. Sakano and L. Pickenhain (Karl Marx U., Leipzig, East Germany).
Psychophysiology, vol. 5, Jul. 1968, p. 1–14. 30 refs.
Staatssekretariat für das Hoch- und Fachschulwesen der DDR supported research.

In a healthy man, the effects of stimulus intensity and a preceding optic signal with different meaning upon: the latencies and amplitudes of the startle blink reflex; the peaks P_1, N_1 and P_2 of the auditory cortical evoked response (ACER); and on the strength of the subjective startle response were investigated. A pistol-shot elicited a startle blink of shorter latency and larger amplitude, and an ACER with shorter latency of peak N_1 and larger amplitude of P_1–N_1 than a click, which was produced by a condenser discharge into a loudspeaker. If an optic stimulus preceded the acoustic stimuli, the amplitudes of the ACER peaks and the latency of peak N_1 decreased. The startle blink, however, displayed only a latency shortening. The subjective startle response was weaker. If the preceding optic signal has an undifferentiated meaning, the amplitudes of the startle blink and the ACER peaks were larger than if an optic signal with differentiated meaning preceded the acoustic stimulus. In the first case, the latency of the startle blink was shorter, but that of the peak N_1 longer; the subjective startle response was stronger. It was shown that only the amplitude of the peak P_1–N_1 of the ACER is directly correlated with the strength of the subjective startle response. The underlying neurophysiological mechanisms were discussed.

A68-81994
TASK COMPLEXITY, ELECTRODERMAL ACTIVITY AND REACTION TIME.
Kenneth M. Kleinman and John A. Stern (Washington U., St. Louis, Mo.).
Psychophysiology, vol. 5, Jul. 1968, p. 51–60. 13 refs.
Grants PHS MH 7081 and PHS MH 07140.

The influence of task complexity upon the relationship between electrodermal activity and reaction time was studied. Subjects performed either a simple or complex fixed foreperiod reaction time task. Various measures of skin resistance were taken before and during performance of the task. Only on the more complex task were electrodermal measures related to reaction time. However, the sign of the relationship was opposite to that found in other investigations; subjects with many spontaneous fluctuations and orienting responses reacted slowly. The results were interpreted in terms of the influence of both task complexity and foreperiod characteristics.

A68-81995
DIGITAL VASOMOTOR CONDITIONING AND BODY HEAT REGULATION.
Warren H. Teichner and Jerrold M. Levine (Northeastern U., Boston, Mass. and North Am. Aviation Co., Columbus, Ohio).
Psychophysiology, vol. 5, Jul. 1968, p. 67–76. 14 refs.
Intern. Congr. of Psychol., XVIII, Moscow, USSR, Aug. 1966.
Grants NIMH 04201 and NIMH 11977.

Human subjects were conditioned to a tone-shock sequence during heat or cold exposure and then given 10 trials of experimental extinction in the heat. In the heat, while exhibiting a general peripheral as well as a digital vasodilation, vasoconstriction developed as a conditioned response; the response did not

extinguish. In the cold, with general peripheral and digital vasoconstriction, vasodilatation developed as the conditioned response. Since the cold-conditioned subjects did not recover completely from their cold exposure during the following heat equilibrium period, the extinction data of this group could not be accepted. A comparison was also made of the differences in thermoregulation and in conditioned responses of preselected subjects varying in latency of cold-induced digital vasodilatation. Although these subjects did differ in their thermophysiological reactions, they did not differ in regard to the nature of the conditioned response developed.

A68-81996
DIRUNAL VARIATIONS OF MUSCLE ACTION POTENTIALS AND WORD ASSOCIATIONS RELATED TO PSYCHOLOGICAL ORIENTATION.

Louis Aarons (Union U., Albany Med. Coll., Div. of Behavioral Sci., N. Y.).

Psychophysiology, vol. 5, Jul. 1968, p. 77–91. 43 refs.
Intern. Symp. on Sleep Psychophysiol. Res., Rome, Italy, Sep. 11–16, 1967.
Grants PHS GRS-5394 and PHS MH-7734.

Theoretical analysis has suggested that the feedback of neuromuscular activity affects quantitative but not qualitative aspects of responses, i.e. arousal provides energy but not direction for behavior. This study was carried out to determine whether or not qualitative aspects of ideation vary with the normal diurnal fluctuations of neuromuscular activity. Word association tests revealed qualitative differences among responses before sleep, upon awakening and at noon. Some differences were related to psychological test variables of kinesthetic orientation, need for change, and anxiety; other differences were independent of psychological test scores but related to the time of the word tests and intensity of muscle action potential (EMG). Subjects with low and high scores on the psychological tests were similar in both body temperature variation and amount of time spent in different electroencephalogram (EEG) sleep stages. EMG levels during sleep were highly correlated with EEG sleep stages for both groups, but low psychological test scorers exhibited more EMG activity than high scorers. Neuromuscular arousal was accompanied by qualitative changes in verbal responses that were related to psychological orientations.

A68-81997
FIFTY HOURS OF WAKEFULNESS.

Daniel Cappon (Med. Arts Building, Toronto, Ontario, Canada) and Robin Banks (Waterloo U., Dept. of Psychol., Ontario, Canada).

Psychophysiology, vol. 5, Jul. 1968, p. 97–98.

Results are reported of an experiment studying the differences between a specific group of psychiatric patients and matched controls during prolonged wakefulness. At eight hr. intervals throughout the study, subjects were tested for heart rate, systolic and diastolic pressure, temperature, rate of tapping (a pencil on paper) for one min., speed of word association, reading speed, speed and accuracy of crossing out a specified letter on a page of typed letters, suggestibility on the sway bar test, and strength of body drives. The latter was assessed by a questionnaire asking subjects to report their need and frequency of urination, defecation, drinking, eating and smoking, and a rating on sexual excitement. The performance of patients and controls was significantly different on nine measures ($p < .05$). Although these differences were observed during a period of wakefulness, it is doubtful that they can be attributed to the prolonged sleepless period.

A68-81998
TELEMETRY OF ARTERIAL FLOW IN MAN WITH A DOPPLER ULTRASONIC FLOWMETER.

Alberto Benchimol, Ivan G. Maia, John L. Gartlan, Jr., and Dean Franklin (Good Samaritan Hosp., Inst. for Cardiovascular Diseases, Phoenix, Ariz.).

American Journal of Cardiology, vol. 22, Jul. 1968, p. 75–84. 9 refs.
NASA Grant NGR-05042 and Grant NIH 11131-01; Ariz. Heart Assn. and Southwest Found. for Med. Res. supported research.

Transcutaneous measurements of brachial artery flow velocity with the Doppler ultrasonic flowmeter were made in 82 subjects, of whom 24 were normal and 58 had heart disease. Aortic stenosis was associated with low peak flow velocity, prolonged ascending limb of the primary wave and decreased retrograde wave. Aortic insufficiency was recognized by the presence of a large secondary wave thought to represent retrograde flow. Subaortic stenosis altered the flow waveform in a characteristic manner. The technic was also found to be useful in the study of cardiac arrhythmias, Valsalva maneuvers and in the study of drugs with primary effect on the peripheral circulation. Although more experience is needed with its use in man, it appears that it may become a useful technic for monitoring patients in intensive care units.

A68-81999
DISCRIMINATION STEP.

Ellen Hisdal (Oslo, U., Inst. of Physics, Norway).

Journal of the Optical Society of America, vol. 58, Jul. 1968, p. 985–991. 12 refs.

A theoretical expression is derived for the least distinguishable step in the number of pulses from an area whose image is focused on and measured by a single photoemissive detector. For large numbers of pulses this discrimination step is found to be equal to 6.8 times the rms fluctuation of the number of pulses at the given level. For the threshold step, the 6.8 factor must be replaced by 4.1. The maximum noise-to-signal ratio is computed for the cases of sample and path noise. A formula is found for the total number of discrimination steps in a macroecell whose photon number may vary between two given limits. Satisfactory agreement is found between computed and experimental values found by other researchers for the discrimination step of temperature, the discrimination step for the eye, the number of discrimination steps in a TV picture element and the number of equal lightness steps in a grey sample as given by the formula of the original Munsell system. A theory which assumes that in observing areas of even radiance, the eye adds up the signals from neighboring retinal detectors can explain some experimental data for the eye.

A68-82000
INTERACTION OF BEHAVIORAL AND PHYSIOLOGICAL STRESS REACTIONS.

Warren H. Teichner (Northeastern U., Boston, Mass.).

Psychological Review, vol. 75, Jul. 1968, p. 271–291. 54 refs.
Inter-Relation of Biol. and Cult. Adaptation, Symp., Burg Wartenstein, Austria, Jul. 21–30, 1966.
Contract AFOSR-2181-67 and Guggenheim Center for Aerospace Health and Safety supported research.

The study of stress is seen as an investigation of the interaction between physiological and behavioral compensatory reactions to physical and symbolic stressors. A conceptual approach is developed and an attempt made to integrate the effects of informational overloads, emotion-provoking stimuli, and the effects of the physical environment into one psychophysiological context. This is done by postulating interregulatory controls among activating mechanisms and data-processing mechanisms with corresponding changes in the strength and direction of physiological and behavioral reactions.

A68-82001
WHAT GIVES RISE TO THE PERCEPTION OF MOTION?
James J. Gibson (Cornell U., Ithaca, N. Y.).
Psychological Review, vol. 75, Jul. 1968, p. 335–346. 20 refs.
Contract NONR 401(14).

The assumption that displacement of the retinal image over the retina is the basis for all perception of motion is rejected. The reasons for the plausibility of this assumption are considered. It is part of the traditional theory that retinal sensations are entailed in visual perception. But it involves a misconception of how the eyes work. Another theory of the information for perceiving motion is proposed in terms of the ambient array of light. The registering of subjective bodily movements by vision is contrasted with the detecting of objective environmental motions. A number of century-old puzzles are resolved by this approach and a set of novel experiments is suggested.

A68-82002
VIGILANCE, AROUSAL, AND HABITUATION.
Jane F. Mackworth (Radcliffe Inst. Cambridge, Mass.).
Psychological Review, vol. 75, Jul. 1968, p. 308–322. 80 refs.

Decrements in performance in vigilance tasks are discussed in terms of habituation of the neural responses to the background events of the tasks. Habituation of the arousal response leads to an increase in variance and amplitude of the spontaneous neural rhythms; this increase in neural noise may result in a decrease in sensitivity to the signal events. Habituation of the evoked responses to both signal and non-signal events of the task produces a decrease in amplitude and increase in latency of the evoked response. This may be the cause of the decreases in correct and false detections which are found in many vigilance tasks. Sensitivity may increase as the neural evoked response to the nonsignal events decreases, thus counteracting the effect of the decrease in the arousal response.

A68-82003
THE ORIENTING REFLEX AND ATTENTION IN COGNITIVE DEVELOPMENT.
W. E. Jeffrey (Calif., U., Los Angeles).
Psychological Review, vol. 75, Jul. 1968, p. 323–334. 43 refs.
Soc. for Res. in Child Develop., Meeting, New York, 1967.

Certain changes in stimulation produce a pattern of physiological responses (orienting reflex) that is presumed to sharpen perception, i.e., focus attention on that cue or subset of cues that is most salient. When the orienting reflex habituates to a particular cue of a complex stimulus, a second and previously less salient cue may now elicit an orienting reflex and attention will then become selective for that cue. Given certain conditions, serial habituation of the orienting reflex to several cues of a stimulus complex will produce a chain of attending responses. With repeated presentation of the stimulus complex, this chain will become a single well-integrated mediating event (schema) that may be used to explain higher-level problem-solving behaviors.

A68-82004
FINITE INTEGER MODELS FOR LEARNING IN INDIVIDUAL SUBJECTS.
John Theios (Wis., U., Madison).
Psychological Review, vol. 75, Jul. 1968, p. 292–307. 22 refs.
Grants PHS HD02212-01 and PHS HD02212-02.

A very simple, yet general, class of inhomogeneous Markov models is proposed as a description of the learning process in individual subjects. The models are mathematically tractable in that it is easy to obtain likelihood functions and maximum likelihood parameter estimates. The models permit the analysis of the sequence of responses made by an individual subject and are applicable to any situation in which the subject emits a relatively long sequence of responses which can be categorized into two mutually exclusive classes. For an M-state model, each response sequence is divided into M segments corresponding to underlying states of responsiveness. Integers corresponding to the trials on which transitions were made from one state to another are selected such that the likelihood of obtaining the subject's exact sequence of responses is maximized. Likelihood ratio tests between some psychologically interesting general and restricted models are discussed. Some implications of finite integer models are outlined for a number of standard learning situations. The relationship of finite integer models to the continuity-noncontinuity question in learning is discussed.

A68-82005
THE INFLUENCE OF VITAMIN D THREE ON THE ACTIVITY OF THYROCALCITONIN IN THE THYROID GLANDS OF THE RAT [DER EINFLUSS VON VITAMIN D THREE AUF DIE AKTIVITAT DES THYREOCALCITONINS IN RATTENSCHILDDRUSEN].
Gerd J. Albrecht (*U. Marburg, Chir. Klin., Urol.-Balneol.* Forschungsstelle, Bad Wildungen, West Germany).
Hoppe-Seyler's Zeitschrift fur Physiologische Chemie, vol. 349, Jun. 1968, p. 779–783. 26 refs. In German.

The amount, in terms of activity, of thyrocalcitonin in thyroid extracts of rats subjected to different doses of vitamin D_3 injected for a long period of time was determined. It was found that under low doses of vitamin D_3 (up to approximately 10,000 i.μ.) normocalcemia in the animals can be maintained by increased secretion of thyrocalcitonin from the thyroid gland. The amount of thyrocalcitonin depends on the dose of vitamin D_3. Higher doses of vitamin D_3 cause a complete depletion of thyrocalcitonin in the thyroid gland and typical symptoms of hypervitaminosis in the form of hypercalcemia. With these findings an attempt was made to explain the physiological paradoxical effect of vitamin D_3 in high doses resulting primarily in a decalcification of bone.

A68-82006
VALIDITY OF UROPEPSIN EXCRETION AS AN OBJECTIVE INDEX OF FATIGUE IN AEROSPACE MEDICINE [VALIDITE DES EXCRETIONS D'UROPEPSINE COMME TEST OBJECTIF DE LA FATIGUE EN MEDECINE AEROSPATIALE].
H. Ducros (Centre d'Essais en Vol, Lab. de Méd. Aérospatiale, Brétigny-sur-Orge, France).
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 5–9. 24 refs. In French.

The present study assessed the value of uropepsin excretion in urine as an objective index of fatigue in subjects under stress. The urines of subjects leading a normal active life were studied by comparing concomitantly uropepsin and catecholamine excretion. Results showed that use of uropepsin excretion as an index should be viewed with caution, in particular subjects under stress resulting from acceleration, altitude sudden variation in temperature, confinement and isolation. These different stresses could influence the subject emotivity and result in a secretion of uropepsin that would be hard to differentiate from the one subsequent to fatigue. Though in some occurrences uropepsin might be considered as a valid test of emotivity, it would be difficult to use the variations of this enzyme to diagnose fatigue.

A68-82007
FUTURE OF FLYING PERSONNEL WITH HEAD INJURIES [AVENIR DES TRAUMATISMES DU CRANE DANS LE PERSONNEL NAVIGANT].

A. Salvagniac and E. Damey.
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 11–29. 13 refs. In French.

A statistical study extending over a 5 to 15 yr. period was presented of 80 cases of head injuries among French flying personnel, and the difficult problem of flight fitness faced by the medical examiners. Two types of trauma were distinguished, head injuries with and without fractures. The need for careful evaluation of each case, improved medical screening to avoid mental and nervous sequelae that could occur after a period of rest or convalescence when the subject returned to active duty were stressed. Absence of clinical, radiological, electroencephalographic (EEG), opthalmological, and otorhinolaryngological sequelae should be established. In all cases where unconsciousness occurred after the accident, or in cases of skull fractures systematic EEG examinations should be performed every six mo. for a period of two yr.; when unconsciousness exceeded 12 hr. the greatest of caution should be exercised. Occurrence of post-traumatic epilepsy was about 26% in these cases. By applying these criteria it should be possible at the present time to maintain a high degree of safety and at the same time to protect the interests of the personnel involved.

A68-82008
FATIGUE AND ADAPTATION IN GLIDER FLIGHTS. 1. BIOCHEMICAL AND ENDOCRINE STUDY [FATIGUE ET ADAPTATION AU COURS DU VOL A VOILE 1ERE PARTIE: ETUDE BIOCHIMIQUE ET ENDOCRINIENNE].
M. Boulangé, P. Paysant, J.-P. Deschamps, G. Callement, and M. Rombach (Nancy, Centre Hosp.-U., Labs. de Physiol. et de Chim. Biol. and Dijon, Center Hosp.-U., Lab. de Physiol., France).
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 31–37. 16 refs. In French.

A biochemical and endocrine study of fatigue and adaptation of student pilots during training in glider aircraft was reported. Changes in urinary 17-ketosteroids, 17-hydrocorticosteroids, creatinine, catecholamines, adrenalin and noradrenalin concentrations were studied. The urine was collected for 24 hr. at the start, middle and end of the training; it was also collected in some cases at the end of a flight. Each pilot was the subject of a careful medical examination upon arrival at the training center, and had to fill out a questionnaire after each flight, mentioning the physical or mental stress encountered and the fatigue experienced. Results of tests showed no occurrences of chronic state of fatigue, even though acute fatigue was observed after each flight, as evidenced by analysis of certain endocrine secretions. Mental and physical improvements were observed in the course of training.

A68-82009
FATIGUE AND ADAPTATION IN GLIDER FLIGHTS. 2. STUDY OF CARDIOVASCULAR RESPONSES [FATIGUE ET ADAPTATION AU COURS DU VOL A VOILE 2E PARTIE: ETUDE DU COMPORTEMENT CARDIO-VASCULAIRE].
J.-P. Deschamps J. Menou, F. Rombach, J.-M. Bertheau, and M. Boulangé (Nancy, Centre Hosp.-U., Lab. de Physiol., France).
Revue de Médecine Aéronautique et Spatiale, vol. 7, no. 25, 1968 p. 38–39. In French.

The effects of glider flights on the cardiovascular system of student pilots and their instructors were investigated in the course of the training period. The pulse rate, blood pressure (in reclining and standing position), electrocardiograms, the time required for the pulse rate to return to normal after exercise (Lian test) and Flack test were recorded at rest, the beginning, middle and end of the course, and after flights. The results of the studies showed no marked variations after flights, and no chronic fatigue. The few cases of acute fatigue recorded were at the start and the end of the training period, and in some subjects with deficient diets.

A68-82010
FATIGUE AND ADAPTATION IN GLIDER FLIGHTS. 3. STUDY OF PSYCHOMOTOR PERFORMANCE [FATIGUE ET ADAPTATION AU COURS DU VOL A VOILE 3E PARTIE: ETUDE PSYCHO-TECHNIQUE].
J.-P. Deschamps, F. Rombach, J. Menou, J. Cuillier, and M. Boulangé (Nancy, Centre Hosp.-U., Lab. de Physiol., France).
Revue de Médecine Aéronautique et Spatiale, vol. 7, no. 25, 1968, p. 40–42. 5 refs. In French.

The purpose of the present study was to examine the psychomotor responses of pilots after long or difficult flights in glider aircraft. The subjects were tested for hand dexterity, movement coordination, reaction time to visual and auditory stimulus, etc. The experiments showed that muscular and psychomotor impairments were moderate and did not cause chronic fatigue. The analysis of some tests provided useful information on the motions performed by the pilots and suggested basic safety requisites for flying gliders.

A68-82011
FATIGUE AND ADAPTATION IN GLIDER FLIGHTS. 4. NUTRITIONAL ASPECTS [FATIGUE ET ADAPTATION AU COURS DU VOL A VOILE 4E PARTIE: ASPECTS NUTRITIONNELS].
M. Boulangé, R. Shalow, J. Menou, J.-P. Crance, and J. Comoy (Nancy, U., Fac. de Med., Lab. de Physiol., France).
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 43–46. 9 refs. In French.

A preliminary study on the nutritional requirements and food intake of pilots flying gliders was presented. The experiments were carried out on volunteer subjects and dealt with blood sugar levels and food rations. The investigation showed dietary deficiencies that could be compensated by modifying the nutritional value of some meals, i.e. (a high-energy, well-balanced breakfast). The omission of the noon meal usually due to the length of glider flights, raised the question of liquid or solid food that the pilot could take with him and that would compensate the loss of a meal. Such improvement of the dietary rations could only result in an increase of flight safety and might even ameliorate individual performances.

A68-82012
OCULAR INJURIES DURING EJECTION [LESIONS OCULAIRES APRES EJECTION].
A. Salvagniac, G. Perdriel, J.-C. Doleans, and J. Chevaleraud.
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 47–48. In French.

The case of a Mystere IV jet fighter pilot who had to eject following a mid-air collison was reported. The ejection occured at a speed of Mach 0.7 at 25,000 ft. The pilot lost his helmet soon after, and was lightly hit by his seat during separation, but made a safe landing. The injuries suffered were benign, bilateral palpebral edema with blood extravasation more marked in the inferior eyelids, bilateral subconjunctival hemorrhages prevelant in the palpebral opening region, and a hematoma on the forehead due to the ejection seat. The pilot recovered completely after three mo. Some comments were made on the possible severe damages that could result from such accidents, the need for laboratory studies on the safety and efficiency of the helmets now in use, and the improvements of the helmets that would give them complete protection of the face and head.

A68-82013
GAS INERTANCE AND BAROMETRIC PRESSURE [INERTANCE GAZEUSE ET PRESSION BAROMETRIQUE].
Ch. Jacquemin and P. Varene (Centre d'Essais en Vol, Lab. de Méd. Aérospatiale, Brétigny-sur-Orge, France).
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 49–57. 54 refs In French.

A mathematical study of measurement methods of gas inertia in the pulmonary ventilation system was presented. Whole body plethysmography could provide, in certain particular ventilatory conditions a specific means of measurement of gas inertia in the human pulmonary system. Inertia being directly related to the density of respiratory gases, must depend on their composition and pressure. This method was suggested by the study of graphic records obtained during plethysmographic measurement of gaseous resistance at altitude and in a hyperbaric environment. The use of the latter experimental situation (one to five atma.) allowed the verification of the hypothesis. The importance of mathematical computations and deductions in applied physiology was stressed.

A68-82014

ANISEIKONIA AND MEDICAL EXAMINATION OF THE FLIGHT PERSONNEL [ANISEICONIE ET EXPERTISE DU PERSONNEL NAVIGANT].

S. Delthil, L. Biard, J. Chevaleraud, and G. Perdriel.

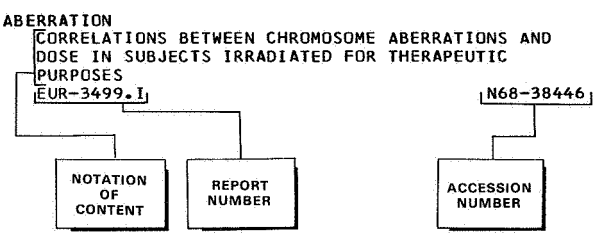
Revue de Medecine Aeronautique et Spatiale, vol. 7, no. 25, 1968, p. 59–60 In French.

The study was conducted on emetropic, isometropic, and lightly anisometropic flyers. Aniseikonia and stereoscopic vision were measured systematically with the American Optical Company eikonometer and by the Howard-Dolman depth perception test. The results showed that the subjects presenting some aniseikonia had very small amounts (under 3%.) It seemed needless to include this test in ophtalmologic examination of lightly emmetropic or anisometropic members of the flying personnel.

Subject Index

AEROSPACE MEDICINE AND BIOLOGY / *a continuing bibliography* NOVEMBER 1968

Typical Subject Index Listing



A Notation of Content, rather than the title of the document, appears under each subject heading; it is listed under several headings to provide multiple access to the subject content. The accession number is located beneath and to the right of the Notation of Content, e.g., N68-12345. Under any one subject heading, the accession numbers are arranged in sequence.

A

ABDOMEN
ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS A68-38255

ABSORPTION
INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

ABSTRACTS
LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS
ATD-68-105-108-9 N68-33037

ACCELERATION PHYSICS
ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES A68-38232

ACCELERATION STRESSES (PHYSIOLOGY)
VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS A68-38218

CORTICAL-RETINAL DISTURBANCES IN OPTICAL ANALYSOR DURING ACCELERATION A68-38223

INTERACTION OF SEMICIRCULAR CANALS AND OTOLITHIC APPARATUS FROM SENSORY AND NYSTAGMIC REACTIONS OF HUMANS SUBJECTED TO POSITIVE AND NEGATIVE ACCELERATION A68-38226

CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING A68-38229

ACTIVITY OF INDIVIDUAL NEURONS OF RETICULAR FORMATION OF MEDULLA OBLONGATA IN CATS DURING VERTICAL ACCELERATION A68-38231

ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN PRECORONARY REGION OF CANINE CEREBRAL CORTEX AS RESULT OF TRANSVERSE G FORCES A68-38235

CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/ A68-38236

X RAY PHOTOGRAPHS OF HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS, ANALYZING CHEST FLATTENING, DIAPHRAGM POSITION AND MEDIASTINAL ORGANS A68-38237

SINGLE AND MULTIPLE ACCELERATION EFFECTS ON DOG LUNGS, DISCUSSING CHANGES IN VASCULAR AND PARENCHYMAL STRUCTURE A68-38238

ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

MORPHOLOGICAL CHANGES IN KIDNEYS OF DOGS SUBJECTED TO SINGLE CHEST-TO-BACK ACCELERATIONS A68-38240

LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION A68-38242

REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION A68-38243

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

DOGS STOMACH AND DUODENUM PERIODIC MOTOR ACTIVITY CHANGES AFTER EXPOSURE TO ACCELERATION FORCES A68-38245

ROLE OF SMALL INTESTINE IN CONTROLLING BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS A68-38246

ROLE OF CENTRAL NERVOUS SYSTEM IN CONTROLLING SECRETORY ACTIVITY OF SMALL INTESTINE AFTER PROLONGED EXPOSURE TO TRANSVERSE ACCELERATION A68-38247

BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

VIBRATIONAL AND LINEAR ACCELERATIONS EFFECTS ON FISH NOTING FREQUENCY OF VIBRATION ROLE A68-38327

VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS DURING ACCELERATED OBSERVER MOVEMENT AND CONSTANT VELOCITY A68-39681

PSYCHOLOGICAL ASPECTS OF MANNED SPACE FLIGHT AND PROBLEMS IN RELIABILITY IMPROVEMENT, NOTING

CENTRIFUGE ACCELERATION TRAINING AND CONDITIONING
A68-39683

PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122 N68-31459

ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

ACCELERATION TOLERANCE
ACCELERATION EFFECTS ON PHYSIOPATHOLOGY, HEART AND CIRCULATION OF ASTRONAUTS DURING LAUNCHING AND LANDING A68-37243

HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE
A68-38220

PROLONGED ACCELERATION EFFECT ON HUMAN ORGANISM TESTED USING RETINAL BLOOD CIRCULATION OBSERVATIONS A68-38222

ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES
A68-38232

ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA
A68-38289

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION A68-38293

PILOT RESISTANCE TO RADIAL ACCELERATION - STUDY CARRIED OUT BY BULGARIAN AIR FORCE
A68-81898

ACCELEROMETERS
ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

TRIAXIAL MULTIPLE CHANNEL ACCELEROMETER MODULE FOR VESTIBULAR STIMULATION MEASUREMENTS IN AIRCRAFT
NASA-CR-96298 N68-32734

ACCIDENT PREVENTION
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY A68-81955

ACCLIMATIZATION
INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING A68-38297

ACETATES
ACUTE ANTILIPOLYTIC EFFECTS OF ETHYL ALCOHOL AND ACETATE IN HUMAN BEINGS A68-81932

ACOUSTIC FATIGUE
ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE
A68-38299

ACOUSTIC MEASUREMENTS
MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION
SMRL-509 N68-31925

ACOUSTIC PROPERTIES
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

ACTINOMYCETES
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

ACTIVITY (BIOLOGY)
HYPODYNAMIA EFFECT ON NITROGEN METABOLISM AND MEANING OF PROPORTIONED PHYSICAL LOADS FOR CONSERVATION OF NITROGEN EQUILIBRIUM
A68-38302

EXCRETION OF BILE ACIDS IN RABBITS DURING FUNCTIONAL STRESS OF NERVOUS SYSTEM OF INTENSE ACTIVITY A68-81883

HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

HUMAN REACTIONS AND ORGANIZING ACTIVITY IN TIME PERCEPTION FOLLOWING EXPOSURE TO LIGHT SIGNALS
RTS-4099 N68-32582

ACTIVITY CYCLES (BIOLOGY)
ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT
A68-38899

BIOLOGICAL RHYTHMS IN MAN, ANIMALS AND PLANTS
A68-38902

INSULATED-LABORATORY TESTS OF EFFECTS OF WEAK TERRESTRIAL ELECTROMAGNETIC RADIATION ON CIRCADIAN PERIODICITY OF MAN N68-32150

INTER AND INTRA-INDIVIDUAL DESYNCHRONIZATION AND BEHAVIOR STUDIED IN ISOLATED GROUP EXPERIMENT
N68-32151

REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE
N68-32153

ADAPTATION
ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES
A68-38232

ROLE OF CELLULAR MECHANISMS IN ADAPTATION OF ANIMALS TO HIGH TEMPERATURES A68-81945

BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS
A68-82008

PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA
AR-2 N68-30963

COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE
TR-25 N68-31335

COMPENSATION FOR DISPLACED VISION AND INTERSENSORY CONFLICT AS FACTOR IN ADAPTATION
N68-32259

ADAPTIVE CONTROL
HUMAN LEARNING BEHAVIOR THEORY IN MANUAL CONTROL TASK MODELED AS COMPUTER PROGRAM
NASA-CR-1124 N68-31911

MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

ADIPOSE TISSUES
ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS
A68-38518

BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

ADRENAL GLAND
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND

FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

ADRENAL METABOLISM
SYMPATHOADRENAL SYSTEM IN PATIENTS WITH VIBRATION DISEASE A68-81986

AEROEMBOLISM
HEMODYNAMIC DISTURBANCES OCCURRING DURING EXPERIMENTAL PULMONARY EMBOLISM IN CATS AND DOGS UNDER HYPOTHERMIC CONDITIONS AND USE OF GANGLION BLOCKERS A68-81882

RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM SMRL-519 N68-31382

AEROSPACE ENGINEERING
STERILIZATION REQUIREMENTS FOR SPACE VEHICLES, DISCUSSING PLANETARY QUARANTINE CONSTRAINTS EFFECTS ON HARDWARE A68-38077

AEROSPACE ENVIRONMENTS
ORBITAL SPACE STATION EXPERIMENTS FOR STUDYING SPACE ENVIRONMENT AND EFFECTS ON TERRESTRIAL LIFE, NOTING CURRENT BIOMEDICAL INFORMATION A68-39684

CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE BMWF-FB-W-68-30 N68-32131

REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE N68-32153

AEROSPACE MEDICINE
TELEMETRIC MEASURING METHODS IN AEROSPACE MEDICINE A68-37189

THERMAL CHARACTERISTICS OF SPACE FLIGHT AND PRINCIPLES OF HEAT REGULATION, DISCUSSING SPACE VEHICLE PROTECTION AND CLOTHING A68-37239

SOVIET COLLECTION OF ARTICLES ON SPACE BIOLOGY, VOLUME 6, COVERING GRAVITATIONAL AND PHYSIOLOGICAL EFFECTS, HUMAN RESPONSE, ETC A68-38213

BIOLOGICAL EXPERIMENTS CONDUCTED ON VOSKHOD SPACECRAFT SHOWING SMALL DISTURBANCES IN DIFFERENT BIOLOGICAL OBJECTS HEREDITARY STRUCTURES A68-38214

ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE TO EVALUATE ASTRONAUTS CENTRAL NERVOUS SYSTEM FUNCTIONAL STATE A68-38215

PROLONGED ACCELERATION EFFECT ON HUMAN ORGANISM TESTED USING RETINAL BLOOD CIRCULATION OBSERVATIONS A68-38222

MATHEMATICAL MODEL OF OTOCONIA TO STUDY VESTIBULAR ANALYSOR UNDER WEIGHTLESSNESS A68-38228

CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/ A68-38236

HIGH PRESSURE OXYGEN BREATHING TECHNIQUES AND TRAINING, PHYSIOLOGY AND HIGH ALTITUDE EMERGENCY DESCENT SURVIVAL A68-38288

CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

DEODORIZING AND REFRESHING EFFECTS OF TOOTHPASTES AND ORAL PREPARATIONS INVESTIGATED FOR SELECTION FOR ASTRONAUT HYGIENE A68-38313

HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

SOVIET BOOK ON SPACE AND TIME PERCEPTION IN OUTER SPACE, DISCUSSING COSMONAUT ROLE IN MAN VEHICLE SYSTEM A68-38335

AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON REGULAR AIRLINE AIRCRAFT A68-38897

CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE BMWF-FB-W-68-30 N68-32131

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM N68-32149

REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE N68-32153

ANNOTATED BIBLIOGRAPHY AND INDEXES ON AEROSPACE MEDICINE AND BIOLOGICAL EFFECTS - JULY 1968 NASA-SP-7011/52/ N68-32707

AFTERIMAGES
ALPHA BLOCKING IN HUMANS DURING VISUAL AFTERIMAGES AS RELATED TO ATTENTION A68-81936

AGE FACTOR
EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

AIR
LITERATURE SURVEY OF AIR REGENERATION IN SEALED ENVIRONMENTS TDCK-50963 N68-32451

AIR POLLUTION
REVIEW OF SOVIET PAPERS CONCERNING AIR MEDIA STATE IN AIRTIGHT MANNED VOLUMES, DISCUSSING TOXICOLOGY OF POLYMER MATERIALS A68-39200

OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH AD-670989 N68-31035

AIR TRANSPORTATION
TRANSATLANTIC FLIGHT EFFECTS ON CIRCADIAN RHYTHM A68-38900

AIRBORNE EQUIPMENT
AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES NPRA-STB-68-10 N68-31387

AIRCRAFT ACCIDENT INVESTIGATION
ALCOHOL AS CONTRIBUTORY FACTOR IN MILITARY AIRCRAFT ACCIDENT FATALITIES FROM POSTMORTEM TOXICOLOGICAL DATA A68-38092

AIRCRAFT ACCIDENTS
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

HUMAN ERRORS ARISING IN MANNED AIRCRAFT SYSTEMS, INVESTIGATING EFFECTS OF FATIGUE, MICROSLEEP, PSYCHOLOGICAL CAUSES, ETC A68-38510

VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

AIRCRAFT CONTROL
HUMAN PILOT OPINION OF AIRCRAFT SAFETY PERFORMANCE ASSISTANCE PROVIDED BY AUTOMATIC SYSTEMS DURING INSTRUMENT TAKEOFF AND LANDING A68-38565

AIRCRAFT MAINTENANCE
HUMAN ERROR MEASUREMENT TECHNIQUE USING USAF MAINTENANCE DATA A68-37616

AIRCRAFT NOISE
AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

AIRCRAFT PERFORMANCE
STATISTICAL PUBLIC OPINION RESEARCH TO CHECK RELIABILITY OF PILOT OPINIONS ON AIRCRAFT FLIGHT CHARACTERISTICS
ICAS PAPER 68-17 A68-39209

SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

AIRCRAFT PILOTS
ASYMPTOMATIC HYPERURICEMIA IN AIRLINE PILOTS INVESTIGATED BY BLOOD ASSAYS FOR ELEVATED URIC ACID CONCENTRATION A68-38093

STATISTICAL PUBLIC OPINION RESEARCH TO CHECK RELIABILITY OF PILOT OPINIONS ON AIRCRAFT FLIGHT CHARACTERISTICS
ICAS PAPER 68-17 A68-39209

FEASIBILITY STUDY TO ESTABLISH NATIONAL PROGRAM FOR TRAINING SKILLED AVIATION PERSONNEL
PB-178076 N68-31686

AIRCRAFT SAFETY
HUMAN PILOT OPINION OF AIRCRAFT SAFETY PERFORMANCE ASSISTANCE PROVIDED BY AUTOMATIC SYSTEMS DURING INSTRUMENT TAKEOFF AND LANDING A68-38565

AIRLINE OPERATIONS
AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON *REGULAR AIRLINE AIRCRAFT* A68-38897

ALERTNESS
DECREMENT IN PERFORMANCE IN VIGILANCE TASKS RELATED TO HABITUATION OF NEURAL RESPONSES TO BACKGROUND EVENTS A68-82002

ALGAE
CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS A68-38305

GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

BIOLOGY AND ECOLOGY OF *INVERTEBRATE AND ALGAE* AQUACULTURES
PB-177767 N68-31737

ALGORITHMS
MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

ALKENES
OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

ALTITUDE ACCLIMATIZATION
EXERCISE AT ALTITUDE - CONFERENCE, MILAN, SEPTEMBER- OCTOBER 1966 A68-37513

HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION A68-38293

ERYTHROCYTE OSMOTIC RESISTIVITY CHANGES DURING HIGH MOUNTAIN ACCLIMATIZATION OF MOUNTAIN CLIMBERS AND ATHLETES A68-38294

RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE A68-81851

IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE A68-81852

ALTITUDE SIMULATION
DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

ALVEOLI
EFFECT OF ETHYL ALCOHOL ON NUMBER AND VIABILITY OF ALVEOLAR MACROPHAGES IN MICE LUNGS A68-81930

AMINES
CIRCADIAN RHYTHMS IN RAT MIDBRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS A68-81988

HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS N68-32147

AMINO ACIDS
AMINO ACID SEQUENCE DETERMINED FROM DIGESTS OF SPINACH FERREDOXIN, NOTING SIMILARITY TO BACTERIAL FERREDOXINS A68-38519

HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION A68-81844

DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS N68-32147

AMMONIA
AMMONIA IN GASTRIC JUICE OF PATIENTS WITH CHRONIC INTOXICATION BY NITRODERIVATIVES OF BENZENE AND ITS HOMOLOGUES A68-81987

AMPHETAMINES
EFFECTS OF AMPHETAMINE ON SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS A68-81916

ANALOG COMPUTERS
UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE USING ANALYTICAL CIRCUITS AND ANALOG COMPUTER A68-81860

ANEMIAS
DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

ANESTHESIA
VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

ANESTHESIOLOGY
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY A68-38771

ANGULAR ACCELERATION
HUMAN VEGETATIVE REACTIONS UNDER ANGULAR ACCELERATIONS NOTING NO DEPENDENCE ON MAGNITUDE

A68-38224

OPTICAL ILLUSIONS OF SUBJECTS UNDER WEIGHTLESSNESS COMBINED WITH ANGULAR AND CORIOLIS ACCELERATIONS
A68-38281

ANIMALS
TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS
A68-38218

VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA
A68-38252

RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES
A68-38253

HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY
A68-38295

AUTONOMIC NERVOUS SYSTEM AND PHYSIOLOGIC *THERMOREGULATION OF BODY TEMPERATURE*
A68-81831

CARBOHYDRATE AND LIPID METABOLISM AND RELATION TO AUTONOMIC NERVOUS SYSTEM AND ENVIRONMENTAL STRESS
A68-81832

INVESTIGATION OF RADIATION RESISTANCE OF SOME LIVING ORGANISMS AND POSSIBLE PRACTICAL APPLICATION IN FIELD OF RADIATION PROTECTION
A68-81888

ROLE OF CELLULAR MECHANISMS IN ADAPTATION OF ANIMALS TO HIGH TEMPERATURES
A68-81945

EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914
N68-31315

LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064
N68-32659

ANOXIA
CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/
A68-38236

PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM
A68-81854

ANTHROPOMETRY
DESIGN OF AIR PASSAGES RELATED TO GAS MOVEMENT IN ALVEOLAR VENTILATION
A68-81915

INTEGRATED SYSTEM OF MOBILITY NOTATION AND STANDARD TECHNIQUES FOR MEASUREMENT OF SPACESUIT MOBILITY
A68-81957

ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203
N68-31454

ANTIRADIATION DRUGS
SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION
A68-38260

APOLLO APPLICATIONS PROGRAM
FEASIBILITY AND DESIGN CONFIGURATION OF ORBITAL ONBOARD CENTRIFUGE FOR HUMAN PHYSIOLOGICAL EXPERIMENTS DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66649
N68-33296

SYSTEMS AND TEST SPECIFICATIONS FOR DEVELOPING SPACE RESEARCH HUMAN CENTRIFUGE ENGINEERING PROTOTYPE FOR APOLLO APPLICATIONS PROGRAM ORBITAL ONBOARD EXPERIMENT
NASA-CR-66650
N68-33297

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651
N68-33298

ARIZONA
STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470
N68-33066

ARM (ANATOMY)
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43
N68-31734

ARMED FORCES
INCREASING MILITARY PROBLEM OF NOISE INCLUDING METHODS OF HEARING MEASUREMENT AND EAR PROTECTION
A68-81816

ARMED FORCES (UNITED STATES)
FLIGHT SURGEONS DUTIES IN UNITED STATES ARMY AVIATION MISSIONS IN REPUBLIC OF VIETNAM
A68-81839

ARMOR
PROTECTIVE ARMOR AGAINST BULLETS FOR FLYING PERSONNEL
A68-81815

AROMATIC COMPOUNDS
MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER
A68-81813

ARRESTING GEAR
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS
A68-38085

ARTERIES
AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25
N68-31808

ARTIFICIAL GRAVITY
SINUSOIDAL MOTION EFFECTS ON CREW PERFORMANCE DURING SPACE FLIGHT
NASA-CR-92211
N68-31101

ARTIFICIAL INTELLIGENCE
VISUAL PERCEPTION AND IMAGE IDENTIFICATION BY READING MACHINES
FTD-MT-66-158
N68-31496

INDUCTIVE INFERENCE RESEARCH
RTB-155
N68-32078

ASCORBIC ACID
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA
A68-81975

ASTIGMATISM
ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN
RAE-LIB-TRANS-1298
N68-31916

ASTRONAUT LOCOMOTION
SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160
N68-33452

ASTRONAUT PERFORMANCE
LABYRINTHINE FUNCTIONALITY IN ASTRONAUTS, CONSIDERING WEIGHTLESSNESS EFFECTS
A68-37238

ACCELERATION EFFECTS ON PHYSIOPATHOLOGY, HEART AND CIRCULATION OF ASTRONAUTS DURING LAUNCHING AND LANDING
A68-37243

DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION
A68-37768

ASTRONAUT MOTION EFFECT ON PRECISE CONTROL OF SPACECRAFT ATTITUDE A68-37790

MANNED ORBITAL LABORATORY CENTRIFUGE RADIUS EFFECTS ON ASTRONAUT PERFORMANCE OF ENTRY TASKS FROM APOLLO ENTRY SIMULATION TESTS A68-38088

VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

ASTRONAUT PERSONAL HYGIENE REQUIREMENTS FOR NORMAL SKIN FUNCTIONING DURING PROLONGED SPACE FLIGHTS A68-38312

DEODORIZING AND REFRESHING EFFECTS OF TOOTHPASTES AND ORAL PREPARATIONS INVESTIGATED FOR SELECTION FOR ASTRONAUT HYGIENE A68-38313

ISOLATION, CONFINEMENT AND SENSORY DEPRIVATION EFFECTS ON ASTRONAUT PERFORMANCE DURING EXTENDED MANNED SPACE FLIGHTS USING THEORETICAL APPROACH A68-39682

SOLVING EQUATIONS OF MOTION TO OBTAIN RELATIONSHIP BETWEEN RANDOM CREW MOTIONS AND ANGULAR CHANGE IN SPACECRAFT ORIENTATION N68-32043

ASTRONAUT TRAINING
HIGH PRESSURE OXYGEN BREATHING TECHNIQUES AND TRAINING, PHYSIOLOGY AND HIGH ALTITUDE EMERGENCY DESCENT SURVIVAL A68-38288

PSYCHOLOGICAL ASPECTS OF MANNED SPACE FLIGHT AND PROBLEMS IN RELIABILITY IMPROVEMENT, NOTING CENTRIFUGE ACCELERATION TRAINING AND CONDITIONING A68-39683

ASTRONAUTS
ASTRONAUT PROTECTION AGAINST EXTREME TEMPERATURE CHANGES NOTING PHYSIOLOGICAL AND PHYSICAL MECHANISMS FOR ADAPTATION TO COLD AND HEAT A68-37240

FOOD RATIONS FOR ASTRONAUTS ON LONG DURATION SPACE FLIGHTS
JPRS-46002 N68-31511

ATMOSPHERIC COMPOSITION
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

ATTENTION
ALPHA BLOCKING IN HUMANS DURING VISUAL AFTERIMAGES AS RELATED TO ATTENTION A68-81936

EFFECT OF SIGNAL RATE ON PERFORMANCE IN TWO KINDS OF VIGILANCE TASK A68-81948

MECHANISMS OF ATTENTION TO BOTH AUDITORY AND VISUAL STIMULI IN HUMANS A68-81985

ORIENTING REFLEX AND ATTENTION IN COGNITIVE DEVELOPMENT AS RELATED TO PROBLEM SOLVING BEHAVIOR A68-82003

ATTITUDE (INCLINATION)
EGOCENTRIC LOCALIZATION OF VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE DEFECTIVE OBSERVERS FOR VARIOUS HEAD AND BODY TILTS A68-39327

BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

ATTITUDE STABILITY
ASTRONAUT MOTION EFFECT ON PRECISE CONTROL OF SPACECRAFT ATTITUDE A68-37790

AUDIOMETRY
INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

AUDITORY DEFECTS
INCREASING MILITARY PROBLEM OF NOISE INCLUDING METHODS OF HEARING MEASUREMENT AND EAR PROTECTION A68-81816

NOISE TRAUMA AND RESULTING HEARING DEFICIENCIES CAUSED BY FIRE ARMS IN ARMY POPULATION A68-81887

AUDITORY PERCEPTION
ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE A68-38299

PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION
SMRL-509 N68-31925

BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

AUDITORY SENSATION AREAS
REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

AUDITORY SIGNALS
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

AUDITORY STIMULI
RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION A68-81897

CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS A68-81913

INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

REPETITION EFFECT AND SHORT-TERM MEMORY OF VISUAL STIMULI A68-81968

PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

ELECTROENCEPHALOGRAMS OF DOGS EXPOSED TO AUDITORY STIMULI OF VARYING INTENSITIES FOR PROLONGED PERIOD OF TIME A68-81980

MECHANISMS OF ATTENTION TO BOTH AUDITORY AND VISUAL STIMULI IN HUMANS A68-81985

EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING AS AFFECTED BY OPTIC STIMULI A68-81993

DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE
TR-25 N68-31335

AUTOMATIC CONTROL
ADULT NERVOUS SYSTEM INCORPORATES DESCRIPTION OF TIME INTERVAL SETS FOR AUTOMATIC CONTROL OF RATE OF MOTIONS, DISCUSSING ACCURACY OF ORGANIZED SEQUENCE OF MOTIONS **A68-38272**

AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

CLOSED PROCESSES OF CONTROL AND AUTOREGULATION IN COMPLICATED BIOLOGICAL SYSTEMS
RTS-4420 N68-32581

AUTOMATIC FLIGHT CONTROL
HUMAN PILOT OPINION OF AIRCRAFT SAFETY PERFORMANCE ASSISTANCE PROVIDED BY AUTOMATIC SYSTEMS DURING INSTRUMENT TAKEOFF AND LANDING A68-38565

AUTOMOBILES
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR A68-81949

ESTIMATION OF VEHICULAR VELOCITY AS FUNCTION OF VISUAL STIMULATION A68-81950

AUTONOMIC NERVOUS SYSTEM
AUTONOMIC NERVOUS SYSTEM AND PHYSIOLOGIC THERMOREGULATION OF BODY TEMPERATURE A68-81831

CARBOHYDRATE AND LIPID METABOLISM AND RELATION TO AUTONOMIC NERVOUS SYSTEM AND ENVIRONMENTAL STRESS A68-81832

METABOLIC TRANSFORMATIONS OF NOREPINEPHRINE AND DRUGS AFFECTING THESE PROCESSES IN AUTONOMIC NERVOUS SYSTEM A68-81833

VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

AVAILABILITY
CHARACTERISTICS, CONSTRAINTS, AND IMPLICATIONS OF LONG DURATION SPACE MISSIONS BASED ON USE OF AVAILABLE HARDWARE AND MAINTENANCE/REPAIR ACTIONS IN SPACE
NASA-CR-73239 N68-32163

B

BACILLUS
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

BACK INJURIES
VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

BACTERIA
SPACE HARDWARE MICROBE CONTAMINATION ASSESSMENT FOR AEROBIC AND ANAEROBIC SPORES, DISCUSSING EXTENDED INCUBATION AND ENRICHED MEDIA FOR RECOVERY A68-38666

BIOLOGICAL EFFECTS OF X RAY IRRADIATION ON MICROCOCCUS DENITRIFICANS N68-32136

ULTRAHIGH VACUUM CHAMBER DESIGN AND EXPERIMENTS TO DETERMINE BIOLOGICAL EFFECTS ON BACTERIA N68-32138

GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS N68-32140

BACTERICIDES
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

BED REST
HYPODYNAMIA EFFECT ON NITROGEN METABOLISM AND MEANING OF PROPORTIONED PHYSICAL LOADS FOR CONSERVATION OF NITROGEN EQUILIBRIUM A68-38302

BEHAVIOR
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

BENZENE POISONING
SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

MUSCULOSKELETAL CHANGES IN CHRONIC INTOXICATION WITH AGENTS OF BENZOL SERIES A68-81873

EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR A68-81877

BERYLLIUM POISONING
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE A68-81891

BIBLIOGRAPHIES
ANNOTATED BIBLIOGRAPHY AND INDEXES ON AEROSPACE MEDICINE AND BIOLOGICAL EFFECTS - JULY 1968
NASA-SP-7011/52/ N68-32707

BINOCULAR VISION
PERSPECTIVE DETERMINANTS OF VISUAL SIZE-CONSTANCY IN BINOCULAR AND MONOCULAR CATS A68-81820

CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

BIOASSAY
BIOLOGICAL QUARANTINE PROTOCOL FOR SAFE HANDLING AND STUDY OF LUNAR SAMPLE IN RECEIVING LABORATORY FOR INFECTIOUS OR TOXIC PROPERTIES
NASA-CR-92209 N68-31008

BIOASTRONAUTICS
SURVIVAL OF LIVING ORGANISMS IN SPACE VEHICLES STUDIED FROM RESULTS OF BIOLOGICAL EXPERIMENTS A68-37237

SPACE ENVIRONMENTAL EFFECTS ON BIOLOGICAL SPECIMENS, DISCUSSING EXPERIMENTATION TECHNIQUE WITH LIFE BIOLOGY IN SPACE FLIGHT A68-37743

SOVIET COLLECTION OF ARTICLES ON SPACE BIOLOGY, VOLUME 6, COVERING GRAVITATIONAL AND PHYSIOLOGICAL EFFECTS, HUMAN RESPONSE, ETC A68-38213

BIOLOGICAL EXPERIMENTS CONDUCTED ON VOSKHOD SPACECRAFT SHOWING SMALL DISTURBANCES IN DIFFERENT BIOLOGICAL OBJECTS HEREDITARY STRUCTURES A68-38214

WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES A68-38248

SOVIET COLLECTION OF PAPERS ON SPACE BIOLOGY, VOLUME 7, COVERING WORK ACTIVITY AND BIOTECHNOLOGY A68-38267

CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMWF-FB-W-68-30 N68-32131

BIOCHEMISTRY
BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS A68-38515

AMINO ACID SEQUENCE DETERMINED FROM DIGESTS OF

SPINACH FERREDOXIN, NOTING SIMILARITY TO BACTERIAL FERREDOXINS A68-38519

ORIGINS OF LIFE AND EVOLUTION FROM MOLECULES TO CELLS, DISCUSSING BIOCHEMISTRY, ENERGETIC METABOLISMS AND COACERVATE SYSTEMS A68-39685

HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS N68-32141

THEORY AND EXPERIMENTAL PROGRAM IN SUPPORT OF CHEMICAL APPROACH TO LIFE ORIGIN AND EVOLUTION N68-32144

THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

EXPERIMENTAL STUDY OF BIOLOGICAL PRINCIPLE OF RHYTHMIC DEOXYRIBONUCLEIC ACID SYNTHESIS N68-32152

BIOCLIMATOLOGY
GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

BIOCONTROL SYSTEMS
MATHEMATICAL SIMULATION METHODS TO STUDY CARDIOVASCULAR SYSTEM CONTROL FUNCTION UNDER EARTH BASED AND WEIGHTLESSNESS CONDITIONS A68-38219

ADULT NERVOUS SYSTEM INCORPORATES DESCRIPTION OF TIME INTERVAL SETS FOR AUTOMATIC CONTROL OF RATE OF MOTIONS, DISCUSSING ACCURACY OF ORGANIZED SEQUENCE OF MOTIONS A68-38272

EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS A68-38276

BIODYNAMICS
HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY A68-38295

BIOELECTRIC POTENTIAL
EFFECTS OF CONTOUR SHARPNESS AND CHECK SIZE ON VISUALLY EVOKED CORTICAL POTENTIALS A68-81835

REVIEW OF CURRENT WORK ROLE OF EVOKED POTENTIALS OF BRAIN IN VISUAL PERCEPTION A68-81894

DISCHARGE OF FRONTAL EYE FIELD NEURONS DURING SACCADIC AND FOLLOWING EYE MOVEMENTS IN UNANESTHETIZED MONKEYS A68-81914

EVALUATING MEMBRANE POTENTIAL AND SPIKE PATTERNS BY EXPERIMENTER-CONTROLLED COMPUTER DISPLAY A68-81923

FREQUENCY-FOLLOWING MICROPHONIC-LIKE NEURAL RESPONSES EVOKED BY SOUND IN CATS A68-81939

VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS A68-81961

CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

ELECTRICAL SENSITIVITY OF EYE EXPOSED TO INTENSIVE PHOTIC STIMULUS A68-81984

EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING AS AFFECTED BY OPTIC STIMULI A68-81993

BIOELECTRICITY
HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION A68-38290

VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

BIOGENY
CRITICAL ANALYSIS OF PANSPERMIA THEORY IN VIEW OF RECENT SPACE FLIGHT DEVELOPMENTS N68-32139

THEORY AND EXPERIMENTAL PROGRAM IN SUPPORT OF CHEMICAL APPROACH TO LIFE ORIGIN AND EVOLUTION N68-32144

BIOINSTRUMENTATION
SPACE ENVIRONMENTAL EFFECTS ON BIOLOGICAL SPECIMENS, DISCUSSING EXPERIMENTATION TECHNIQUE WITH LIFE BIOLOGY IN SPACE FLIGHT A68-37743

SCOPE AND PROBLEMS OF READYING EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT FOR LAUNCH AND FLIGHT N68-32137

BIOLOGICAL EFFECTS
GAMMA RADIATION EXPOSURE AND WEIGHTLESSNESS EFFECTS COMPARED FOR BIOLOGICAL MATERIAL DURING BIOSATELLE 2 FLIGHT AND IN EARTH CONTROL CAPSULE, NOTING RADIATION SOURCES A68-37453

BIOLOGICAL EXPERIMENTS CONDUCTED ON VOSKHOD SPACECRAFT SHOWING SMALL DISTURBANCES IN DIFFERENT BIOLOGICAL OBJECTS HEREDITARY STRUCTURES A68-38214

BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

FISSION NEUTRON SOURCES AND DOSIMETRY IN TISSUE EQUIVALENT PHANTOM - CALIFORNIUM 252
BNL-12452 N68-31645

BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS N68-32134

BIOLOGICAL EFFECTS OF X RAY IRRADIATION ON MICROCOCCUS DENITRIFICANS N68-32136

ULTRAHIGH VACUUM CHAMBER DESIGN AND EXPERIMENTS TO DETERMINE BIOLOGICAL EFFECTS ON BACTERIA N68-32138

WEIGHTLESSNESS SIMULATION AND STUDIES OF EFFECTS ON MICROORGANISMS, ALGAE, AND INSECTS N68-32142

ANNOTATED BIBLIOGRAPHY AND INDEXES ON AEROSPACE MEDICINE AND BIOLOGICAL EFFECTS - JULY 1968
NASA-SP-7011/52/ N68-32707

BIOLOGICAL EVOLUTION
BIOLOGICALLY ORIENTED COSMOLOGICAL THEORY ASSUMING BIOLOGICAL FIELD THEORY, DISCUSSING DETECTION OF EXTRATERRESTRIAL LIFE AND COMMUNICATION A68-37808

ORIGINS OF LIFE AND EVOLUTION FROM MOLECULES TO CELLS, DISCUSSING BIOCHEMISTRY, ENERGETIC METABOLISMS AND COACERVATE SYSTEMS A68-39685

CRITICAL ANALYSIS OF PANSPERMIA THEORY IN VIEW OF RECENT SPACE FLIGHT DEVELOPMENTS N68-32139

THEORY AND EXPERIMENTAL PROGRAM IN SUPPORT OF CHEMICAL APPROACH TO LIFE ORIGIN AND EVOLUTION N68-32144

THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

BIOMETRICS
SCOPE AND PROBLEMS OF READYING EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT FOR LAUNCH AND FLIGHT N68-32137

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM N68-32149

BIONICS
PARAMETRIC PERFORMANCE ANALYSIS OF OXYGEN TRANSPORT SYSTEM A68-81958

CLOSED PROCESSES OF CONTROL AND AUTOREGULATION IN COMPLICATED BIOLOGICAL SYSTEMS
RTS-4420 N68-32581

BIOPHYSICS
CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMWF-FB-W-68-30 N68-32131

BIOSATELLITES
GAMMA RADIATION EXPOSURE AND WEIGHTLESSNESS EFFECTS COMPARED FOR BIOLOGICAL MATERIAL DURING BIOSATELLE 2 FLIGHT AND IN EARTH CONTROL CAPSULE, NOTING RADIATION SOURCES A68-37453

SPACE ENVIRONMENTAL EFFECTS ON BIOLOGICAL SPECIMENS, DISCUSSING EXPERIMENTATION TECHNIQUE WITH LIFE BIOLOGY IN SPACE FLIGHT A68-37743

N ASA PROGRAM OUTLINE ON RESEARCH AND DEVELOPMENT RELATED TO BIOLOGICAL SPACE EXPLORATION N68-32132

SCOPE AND PROBLEMS OF READYING EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT FOR LAUNCH AND FLIGHT N68-32137

BIOSYNTHESIS
RIBULOSE-1, 5-DIPHOSPHATE CARBOXYLASE SYNTHESIS AND DEGRADATION IN HYDROGENEMONAS FACILIS AND HYDROGENEMONAS EUTROPHA, NOTING EFFECTS OF AERATION, FERRIC CHLORIDE AND OXYGEN TENSION A68-38664

STEROL BIOSYNTHESIS PATHWAYS IN CHLORELLA ELLIPSOIDEA, DISCUSSING FUCOSTEROL CONVERSION TO CLIONASTEROL A68-39267

EXPERIMENTAL STUDY OF BIOLOGICAL PRINCIPLE OF RHYTHMIC DEOXYRIBONUCLEIC ACID SYNTHESIS N68-32152

X RAY EFFECTS ON PHOSPHOLIPIDE AND PRESSURES
NASA-CR-96228 N68-32427

BIOTECHNOLOGY
SOVIET COLLECTION OF PAPERS ON SPACE BIOLOGY, VOLUME 7, COVERING WORK ACTIVITY AND BIOTECHNOLOGY A68-38267

CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS A68-38305

AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON REGULAR AIRLINE AIRCRAFT A68-38897

BIOTELEMETRY
ELECTRODE PROBLEMS IN RECORDING SKIN RESPONSES IN FREELY MOVING SUBJECTS NOTING IMPLANTATION, ELECTROMECHANICAL AND RADIO SIGNAL INTERFERENCE A68-38517

DESIGN OF SUBMINIATURE CRYSTAL CONTROLLED BIOLOGICAL TRANSMITTER FOR INTERNAL OR EXTERNAL USE A68-81814

GASTRIC PRESSURES RECORDED BY TELEMETRIC METHODS IN FASTING HUMANS A68-81826

TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

BLOOD
ROLE OF SMALL INTESTINE IN CONTROLLING BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS A68-38246

HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

BROMSULPHALEN RETENTION TEST DURING PROLONGED FASTS RELATED TO CHANGES IN PLASMA VOLUME OF OBESE HUMANS A68-81847

CHANGES IN RESPIRATION, OXYGEN TRANSPORT FUNCTION OF BLOOD AND OXYGEN PARAMETERS OF YOUNG HUMANS DURING HYPOXIA A68-81872

BLOOD CIRCULATION
PROLONGED ACCELERATION EFFECT ON HUMAN ORGANISM TESTED USING RETINAL BLOOD CIRCULATION OBSERVATIONS A68-38222

CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

BLOOD FLOW
VESTIBULAR CORIOLIS REACTION EFFECT ON HUMAN RESPIRATION AND BLOOD FLOW CHANGES FROM CENTRIFUGE TESTS WITH IMPOSED HEAD NODDING A68-38087

EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

BLOOD PLASMA
DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

BLOOD PRESSURE
BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

BODY COMPOSITION (BIOLOGY)
BODY COMPOSITION CHANGES IN OBESE HUMANS DURING INTERMITTENT STARVATION A68-81846

BODY TEMPERATURE
PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL

TEMPERATURES A68-38896

RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

BODY WEIGHT
CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

BONES
EFFECT OF VITAMIN D ON CALCIUM AND PHOSPHORUS CONTENT IN BONES OF ALBINO RATS WITH RELATION TO AMOUNT OF FAT AND CALCIUM IN DIETS A68-81977

HISTOLOGICAL DISTRIBUTION AND RETENTION OF LEAD, RADIOACTIVE SULFUR, AND RADIOACTIVE CALCIUM IN NEW COMPACT BONE SUBSTANCE
NASA-TT-F-11862 N68-31591

BRAIN
HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION A68-38290

ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS A68-81874

CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

SUBCORTICAL AND CORTICAL ELECTROENCEPHALOGRAPHIC CORRELATION IN MAN - COMPUTER STUDY A68-81885

REVIEW OF CURRENT WORK ROLE OF EVOKED POTENTIALS OF BRAIN IN VISUAL PERCEPTION A68-81894

EFFECTS OF MUTUAL RELEVANCE OF STIMULI IN RIGHT AND LEFT VISUAL HEMIFIELDS ON ORGANIZATIONAL PROCESSES OF PATTERN PERCEPTION A68-81901

EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

DECREMENT IN PERFORMANCE IN VIGILANCE TASKS RELATED TO HABITUATION OF NEURAL RESPONSES TO BACKGROUND EVENTS A68-82002

BRAIN CIRCULATION
CATS AND RABBITS OXYGEN CONTENT IN BRAIN TISSUES MEASURED UNDER G FORCES NOTING DEPENDENCE ON MAGNITUDE AND DIRECTION A68-38234

BRAIN DAMAGE
STATISTICAL STUDY OF SKULL TRAUMATISMS AND MEDICAL STANDARDS OF FLIGHT FITNESS A68-82007

BRAIN STEM
ACTIVITY OF INDIVIDUAL NEURONS OF RETICULAR FORMATION OF MEDULLA OBLONGATA IN CATS DURING VERTICAL ACCELERATION A68-38231

BRIGHTNESS
THRESHOLD VALUES AND PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION A68-81837

BROMIDES
EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

BURNS (INJURIES)
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

C

CALCIFEROL
EFFECT OF VITAMIN D ON CALCIUM AND PHOSPHORUS CONTENT IN BONES OF ALBINO RATS WITH RELATION TO AMOUNT OF FAT AND CALCIUM IN DIETS A68-81977

INFLUENCE OF VITAMIN D THREE ON THYROCALCITONIN ACTIVITY IN THYROID GLAND OF RATS A68-82005

CALCIUM
CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

CALCIUM METABOLISM
SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS A68-81827

EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION IN HUMANS A68-81841

INFLUENCE OF VITAMIN D THREE ON THYROCALCITONIN ACTIVITY IN THYROID GLAND OF RATS A68-82005

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM N68-32149

CALIFORNIUM ISOTOPES
FISSION NEUTRON SOURCES AND DOSIMETRY IN TISSUE EQUIVALENT PHANTOM - CALIFORNIUM 252
BNL-12452 N68-31645

CARBOHYDRATE METABOLISM
CARBOHYDRATE AND LIPID METABOLISM AND RELATION TO AUTONOMIC NERVOUS SYSTEM AND ENVIRONMENTAL STRESS A68-81832

EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

CARBOHYDRATES
PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE A68-81908

CARBON DIOXIDE
MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

OPTIONAL SCHEME FOR ERYTHROCYTE MECHANISMS IN CARBON DIOXIDE TRANSPORT A68-81849

PROBLEMS ASSOCIATED WITH DETERMINATION OF CARBON DIOXIDE BY INFRARED ABSORPTION A68-81863

CARBON DIOXIDE CONCENTRATION
ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE A68-38285

PHYSIOLOGICAL EFFECTS IN RATS OF SUBSTITUTING HELIUM FOR NITROGEN UNDER HYPOXIA AND HIGH CARBON DIOXIDE CONCENTRATIONS A68-38286

CARBON DIOXIDE REMOVAL
AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

CARBON TETRACHLORIDE POISONING
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

CARDIOVASCULAR SYSTEM
CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

MATHEMATICAL SIMULATION METHODS TO STUDY CARDIOVASCULAR SYSTEM CONTROL FUNCTION UNDER EARTH BASED AND WEIGHTLESSNESS CONDITIONS A68-38219

LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

CARDIOVASCULAR DECONDITIONING AFTER SPACE TUMBLING SAM-TR-68-32 N68-32800

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE
NASA-CR-96450 N68-33333

CASE HISTORIES
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

SIGNS AND SYMPTOMS OBSERVED IN HISTORIES OF WORKERS WITH ACUTE HYDROGEN DISULFIDE INTOXICATION A68-81946

CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

CATARACTS
OCCURRENCE OF CATARACTS IN WORKERS EXPOSED TO HEAT AND GLARE A68-81864

CATECHOLAMINE
METHOD OF QUANTITATIVE DETERMINATION OF EPINEPHRINE AND NOREPINEPHRINE IN URINE A68-81865

CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

CATS
CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING A68-38229

REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

ACTIVITY OF INDIVIDUAL NEURONS OF RETICULAR FORMATION OF MEDULLA OBLONGATA IN CATS DURING VERTICAL ACCELERATION A68-38231

CATS AND RABBITS OXYGEN CONTENT IN BRAIN TISSUES MEASURED UNDER G FORCES NOTING DEPENDENCE ON MAGNITUDE AND DIRECTION A68-38234

PERSPECTIVE DETERMINANTS OF VISUAL SIZE-CONSTANCY IN BINOCULAR AND MONOCULAR CATS A68-81820

MORPHOLOGICAL AND PHYSIOLOGICAL CHANGES IN BRAIN OF CATS GIVEN CHLORPROMAZINE A68-81868

USE OF HYDROQUININE FOR PREVENTION AND TREATMENT OF OXYGEN DEFICIENCY IN CATS A68-81870

CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS A68-81913

EFFECTS OF AMPHETAMINE ON SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS A68-81916

FREQUENCY-FOLLOWING MICROPHONIC-LIKE NEURAL RESPONSES EVOKED BY SOUND IN CATS A68-81939

EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS A68-81961

ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

CELL DIVISION
HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY A68-38295

CELLS (BIOLOGY)
INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

ROLE OF CELLULAR MECHANISMS IN ADAPTATION OF ANIMALS TO HIGH TEMPERATURES A68-81945

PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA
AR-2 N68-30963

REVIEW OF LITERATURE ON STRUCTURE OF CELL MEMBRANES
RTS-4481 N68-32664

COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE N68-33288

CENTRAL NERVOUS SYSTEM
ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE TO EVALUATE ASTRONAUTS CENTRAL NERVOUS SYSTEM FUNCTIONAL STATE A68-38215

CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN

ONTOGENESIS/ A68-38236

ROLE OF CENTRAL NERVOUS SYSTEM IN CONTROLLING SECRETORY ACTIVITY OF SMALL INTESTINE AFTER PROLONGED EXPOSURE TO TRANSVERSE ACCELERATION A68-38247

CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA A68-38284

NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

MORPHOLOGICAL AND PHYSIOLOGICAL CHANGES IN BRAIN OF CATS GIVEN CHLORPROMAZINE A68-81868

DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF NERVOUS SYSTEM A68-81937

FREQUENCY-FOLLOWING MICROPHONIC-LIKE NEURAL RESPONSES EVOKED BY SOUND IN CATS A68-81939

FREQUENCY SPECTRA IN VARIOUS BRAIN REGIONS OF RABBITS AND HUMANS AND THEIR CHANGES DURING VESTIBULAR AND OPTOKINETIC STIMULI A68-81944

ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

CIRCADIAN RHYTHMS IN RAT MIDBRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS A68-81988

PHYSIOLOGICAL MECHANISMS FOR SELF-REGULATION OF HIGHER NERVOUS ACTIVITY IN ANIMALS AND MAN FTD-HT-23-808-67 N68-32030

CENTRIFUGING STRESS
ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS A68-38518

PILOT RESISTANCE TO RADIAL ACCELERATION - STUDY CARRIED OUT BY BULGARIAN AIR FORCE A68-81898

CEREBRAL CORTEX
CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING A68-38229

REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN PRECORONARY REGION OF CANINE CEREBRAL CORTEX AS RESULT OF TRANSVERSE G FORCES A68-38235

RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION A68-81897

SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS A68-81935

CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS A68-81961

CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM SMRL-519 N68-31382

CEREBROSPINAL FLUID
LEAD CONCENTRATIONS IN CEREBROSPINAL FLUID IN PATIENTS EXPOSED TO LEAD POISONING FROM SOURCES INCLUDING TETRAETHYL LEAD A68-81878

CHEMICAL ANALYSIS
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS NASA-CR-96453 N68-33555

CHEMICAL COMPOSITION
AMINO ACID SEQUENCE DETERMINED FROM DIGESTS OF SPINACH FERREDOXIN, NOTING SIMILARITY TO BACTERIAL FERREDOXINS A68-38519

OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, *DISCUSSING HYDROCARBON COMPOSITION* INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS NASA-CR-96453 N68-33555

CHEMICAL COMPOUNDS
CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

CHEMORECEPTORS
RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE A68-81851

CHEMOTHERAPY
ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN RAE-LIB-TRANS-1298 N68-31916

CHICKENS
EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

CHILE
STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS NASA-CR-96470 N68-33066

CHLORELLA
PHYSIOLOGICAL-ECOLOGICAL INVESTIGATIONS OF CHLORELLA CULTURES AS LINK IN CLOSED ECOLOGICAL SYSTEM A68-38319

AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH A68-38321

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

GROWTH OF TILAPIA FISH KEPT ON DRY CHLORELLA DIET COMBINED WITH OTHER FODDER A68-38326

GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

STEROL BIOSYNTHESIS PATHWAYS IN CHLORELLA ELLIPSOIDEA, DISCUSSING FUCOSTEROL CONVERSION TO CLIONASTEROL **A68-39267**

DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

CHLOROETHYLENE
EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLOROETHYLENE IN ADULT AND NEWBORN RATS A68-81890

CHLOROPHYLLS
PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF PORPHIN SERIES
RTS-4318 N68-32429

CHLORPROMAZINE
NOVOCAIN POTENTIATION OF CHLORPROMAZINE TRANQUILIZING PROPERTIES IN ANIMALS A68-81866

MORPHOLOGICAL AND PHYSIOLOGICAL CHANGES IN BRAIN OF CATS GIVEN CHLORPROMAZINE A68-81868

ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

CHOLESTEROL
ROLE OF SMALL INTESTINE IN CONTROLLING BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS A68-38246

CHOLINE
RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION A68-81897

CHOLINESTERASE
RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS A68-38254

CHROMOSOMES
CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER A68-81813

CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

CIRCADIAN RHYTHMS
TRANSATLANTIC FLIGHT EFFECTS ON CIRCADIAN RHYTHM A68-38900

CIRCADIAN RHYTHM EXISTENCE FOR PSYCHOLOGICAL PHENOMENA A68-38901

BIOLOGICAL RHYTHMS IN MAN, ANIMALS AND PLANTS A68-38902

EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS A68-81827

REVIEW OF LITERATURE ON BIOLOGICAL RHYTHMS IN PLANTS, ANIMALS AND HUMANS A68-81829

DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

CIRCADIAN RHYTHMS IN RAT MIDBRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS A68-81988

INSULATED-LABORATORY TESTS OF EFFECTS OF WEAK TERRESTRIAL ELECTROMAGNETIC RADIATION ON CIRCADIAN PERIODICITY OF MAN N68-32150

REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE N68-32153

CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

CIRCULATORY SYSTEM
PARAMETRIC PERFORMANCE ANALYSIS OF OXYGEN TRANSPORT SYSTEM A68-81958

CIVIL AVIATION
RADIOLOGICAL CONTAMINATION DETECTED DURING CIVILIAN AIRCRAFT FLIGHTS A68-37241

CLEAN ROOMS
BIOLOGICAL QUARANTINE PROTOCOL FOR SAFE HANDLING AND STUDY OF LUNAR SAMPLE IN RECEIVING LABORATORY FOR INFECTIOUS OR TOXIC PROPERTIES
NASA-CR-92209 N68-31008

CLINICAL MEDICINE
ASYMPTOMATIC HYPERURICEMIA IN AIRLINE PILOTS INVESTIGATED BY BLOOD ASSAYS FOR ELEVATED URIC ACID CONCENTRATION A68-38093

CLOSED ECOLOGICAL SYSTEMS
CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

PHYSIOLOGICAL-ECOLOGICAL INVESTIGATIONS OF CHLORELLA CULTURES AS LINK IN CLOSED ECOLOGICAL SYSTEM A68-38319

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

TILAPIA FISH AS POSSIBLE COMPONENT OF SPACECRAFT LIFE SUPPORT SYSTEMS A68-38324

AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS N68-32140

HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS N68-32141

CULTIVATING PLANTS FOR CLOSED ECOLOGICAL SYSTEMS DURING LONG MANNED SPACE FLIGHTS
JPRS-46306 N68-33269

CODING
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY A68-81955

INTEGRATED SYSTEM OF MOBILITY NOTATION AND STANDARD TECHNIQUES FOR MEASUREMENT OF SPACESUIT MOBILITY A68-81957

SPATIAL VISUAL ENCODING STRATEGIES IN SEQUENTIAL SHORT-TERM MEMORY A68-81973

COLD ACCLIMATIZATION
COLD ACCLIMATION IN PUERTO RICANS A68-81859

COLD WEATHER TESTS
BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

COLOR
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY A68-81955

COMBUSTION PRODUCTS
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

COMMUNICATION THEORY
SUMMARY INFORMATION ON SOVIET RESEARCH IN TELEPATHY AND APPLICATION OF COMMUNICATION THEORY TECHNIQUES TO TELEPATHIC COMMUNICATION

N68-32034

ANALYSIS OF SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION BASED ON FRAMEWORK OF INFORMATION AND COMMUNICATION THEORIES N68-32036

COMPENSATION
COMPENSATION FOR DISPLACED VISION AND INTERSENSORY CONFLICT AS FACTOR IN ADAPTATION N68-32259

COMPRESSING
RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM
SMRL-519 N68-31382

COMPUTER PROGRAMS
SUBCORTICAL AND CORTICAL ELECTROENCEPHALOGRAPHIC CORRELATION IN MAN - COMPUTER STUDY A68-81885

EVALUATING MEMBRANE POTENTIAL AND SPIKE PATTERNS BY EXPERIMENTER-CONTROLLED COMPUTER DISPLAY A68-81923

INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH USE OF COMPUTER TECHNIQUES A68-81954

MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY N68-32573

COMPUTERIZED SIMULATION
HUMAN LEARNING BEHAVIOR THEORY IN MANUAL CONTROL TASK MODELED AS COMPUTER PROGRAM
NASA-CR-1124 N68-31911

MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

CONCENTRATION (COMPOSITION)
LEAD CONCENTRATIONS IN CEREBROSPINAL FLUID IN PATIENTS EXPOSED TO LEAD POISONING FROM SOURCES INCLUDING TETRAETHYL LEAD A68-81878

CONDENSING
CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

CONDITIONING (LEARNING)
HORIZONTAL ELECTROOCULOGRAPHIC POTENTIAL OPERANT CONDITIONING OF EYE MOVEMENT IN MONKEYS / MACACA NEMESTRINA/ A68-38659

NEGATIVE CONTRAST EFFECT OF REWARD DELAY IN DIFFERENTIAL CONDITIONING IN RATS A68-81967

ELECTROPHYSIOLOGICAL STUDY OF CONDITIONED REACTIONS TO TIME IN HUMANS A68-81981

DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

ELECTRIC STIMULI OF DOGS TO STUDY FUNCTIONAL STRUCTURE OF TEMPORARY CONNECTION IN AVOIDANCE REACTIONS
NS-59 N68-31791

HUMAN LEARNING BEHAVIOR THEORY IN MANUAL CONTROL TASK MODELED AS COMPUTER PROGRAM
NASA-CR-1124 N68-31911

BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

CARDIOVASCULAR DECONDITIONING AFTER SPACE TUMBLING
SAM-TR-68-32 N68-32800

CONFERENCES
EXERCISE AT ALTITUDE - CONFERENCE, MILAN, SEPTEMBER- OCTOBER 1966 A68-37513

BIOLOGY IN SPACE - CONFERENCE, CAMBRIDGE, ENGLAND, JULY 1967 A68-39680

CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMMF-FB-W-68-30 N68-32131

CONFINING
CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

CONFUSION
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY A68-81955

CONTROL SIMULATION
RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

CONTROLLED ATMOSPHERES
ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE A68-38299

LITERATURE SURVEY OF AIR REGENERATION IN SEALED ENVIRONMENTS
TDCK-50963 N68-32451

COORDINATION
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

COORDINATION OF MOVEMENTS OF EYES AND HAND IN VARIOUS MOTOR TASKS A68-81978

CORIOLIS EFFECT
VESTIBULAR CORIOLIS REACTION EFFECT ON HUMAN RESPIRATION AND BLOOD FLOW CHANGES FROM CENTRIFUGE TESTS WITH IMPOSED HEAD NODDING A68-38087

OPTICAL ILLUSIONS OF SUBJECTS UNDER WEIGHTLESSNESS COMBINED WITH ANGULAR AND CORIOLIS ACCELERATIONS A68-38281

PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122 N68-31459

CORNEA
HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

CORTICOSTEROIDS
ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

COSMOLOGY
BIOLOGICALLY ORIENTED COSMOLOGICAL THEORY ASSUMING BIOLOGICAL FIELD THEORY, DISCUSSING DETECTION OF EXTRATERRESTRIAL LIFE AND COMMUNICATION A68-37808

CRASH INJURIES
VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

CRASH LANDING
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

CRITICAL FLICKER FUSION
CRITICAL FLICKER FUSION FREQUENCY USED AS A METHOD OF DETERMINATION OF EFFECT OF GLARE IN MAN A68-81904

CUES
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION

LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

CULTURE TECHNIQUES
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

SPACE HARDWARE MICROBE CONTAMINATION ASSESSMENT FOR AEROBIC AND ANAEROBIC SPORES, DISCUSSING EXTENDED INCUBATION AND ENRICHED MEDIA FOR RECOVERY A68-38666

PROLONGED ORGANOTROPHIC GROWTH OF HYDROGENOMONAS H 16 IN CHEMOSTATS A68-81918

BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767 N68-31737

CYSTEINE
CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE A68-81912

CYTOGENESIS
CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

CYTOLOGY
CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

D

DATA ACQUISITION
EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS A68-38276

DATA PROCESSING
AUTOMATIC DATA PROCESSING SYSTEM FOR STUDIES OF HUMAN EXTERNAL RESPIRATION FUNCTION PERMITTING RESPIRATORY SYSTEM CONDITION CONTROL A68-38265

HUMAN METHOD OF ORGANIZING ACTIVITY, DISCUSSING DECISION MAKING FOR NEXT ACTION WHILE ESTIMATING PRECEDING ACTIONS WITH SIMULTANEOUS CONSIDERATION OF INSTANTANEOUS SIGNAL A68-38273

DATA PROCESSING EQUIPMENT
MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING RESPONSES
ARL-TR-68-4 N68-32814

DATA RECORDERS
MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING RESPONSES
ARL-TR-68-4 N68-32814

DATA REDUCTION
HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS A68-81952

DATA STORAGE
INFORMATION LOSS IN VISUAL PREPERCEPTUAL SYSTEM N68-32309

DATA SYSTEMS
VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

DATA TRANSMISSION
TELEMETRIC MEASURING METHODS IN AEROSPACE MEDICINE A68-37189

DEACTIVATION
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION N68-33479

DECELERATION
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE A68-38221

DECISION MAKING
HUMAN METHOD OF ORGANIZING ACTIVITY, DISCUSSING DECISION MAKING FOR NEXT ACTION WHILE ESTIMATING PRECEDING ACTIONS WITH SIMULTANEOUS CONSIDERATION OF INSTANTANEOUS SIGNAL A68-38273

HUMAN FACTORS AND MANS ROLE IN MAN MACHINE SYSTEMS APPLIED TO ALLOCATIVE DECISION MAKING
AD-671128 N68-31149

EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING
TR-12 N68-31881

PSYCHOLOGICAL FACTORS IN THINKING DIRECTION DURING PROBLEM SOLVING
RTS-4098 N68-32506

DECOMPRESSION SICKNESS
RELEVANT PHASE CONDITIONS FOR PREDICTING OCCURRENCE OF DECOMPRESSION SICKNESS IN GOATS A68-81861

ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE A68-81884

TONAWANDA 2 MODEL OF INERT GAS TRANSPORT FOR PREDICTING INCIDENCE OF DECOMPRESSION SICKNESS IN FLIGHT PROFILES
NASA-CR-92212 N68-31215

DECONTAMINATION
OBJECTIVES AND CRITERIA FOR STERILIZATION AND DECONTAMINATION OF SPACE VEHICLES, STRESSING MARS MISSIONS A68-38076

STERILIZATION REQUIREMENTS FOR SPACE VEHICLES, DISCUSSING PLANETARY QUARANTINE CONSTRAINTS EFFECTS ON HARDWARE A68-38077

SPACE VEHICLE STERILIZATION AND DECONTAMINATION, DISCUSSING DRY HEAT STERILIZATION AND CAPSULE SYSTEM ADVANCED DEVELOPMENT A68-38078

BIOLOGICAL CLEANABILITY OF SPACECRAFT SURFACES INVESTIGATED BY RADIOISOTOPE TRACER TECHNIQUES A68-38090

SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

DEHYDROGENATION
PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF PORPHIN SERIES
RTS-4318 N68-32429

DELAY
NEGATIVE CONTRAST EFFECT OF REWARD DELAY IN DIFFERENTIAL CONDITIONING IN RATS A68-81967

DEOXYRIBONUCLEIC ACID
EXPERIMENTAL STUDY OF BIOLOGICAL PRINCIPLE OF RHYTHMIC DEOXYRIBONUCLEIC ACID SYNTHESIS N68-32152

DESERTS
STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

DETECTION
THEORETICAL EXPRESS DERIVED FOR LEAST DISTINGUISHABLE STEP IN NUMBER OF PULSES FROM AREA WHOSE IMAGE IS FOCUSED ON AND MEASURED BY SINGLE PHOTOEMISSIVE DETECTOR A68-81999

DETONATION
NOISE TRAUMA AND RESULTING HEARING DEFICIENCIES CAUSED BY FIRE ARMS IN ARMY POPULATION

A68-81887

DIAGNOSIS
NEUROLOGICAL ASPECTS OF DIFFERENTIAL DIAGNOSIS OF VERTIGO A68-81812

DIAPHRAGM (ANATOMY)
X RAY PHOTOGRAPHS OF HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS, ANALYZING CHEST FLATTENING, DIAPHRAGM POSITION AND MEDIASTINAL ORGANS A68-38237

DICTIONARIES
VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

DIETS
MATHEMATICAL METHOD TO SELECT FOOD RATION WITH PRESCRIBED COMPOSITION AND CALORIFIC VALUE FROM LIMITED ASSORTMENT OF PRODUCTS A68-38306

GROWTH OF TILAPIA FISH KEPT ON NORMAL ANIMAL, MIXED AND VEGETABLE FOOD A68-38325

INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS A68-81931

EFFECT OF VITAMIN D ON CALCIUM AND PHOSPHORUS CONTENT IN BONES OF ALBINO RATS WITH RELATION TO AMOUNT OF FAT AND CALCIUM IN DIETS A68-81977

NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

EFFECTS OF DIET VARIATION ON SECRETORY FUNCTION OF SMALL INTESTINE
RTS-4530 N68-32764

DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

DIGESTIVE SYSTEM
EFFECTS OF DIET VARIATION ON SECRETORY FUNCTION OF SMALL INTESTINE
RTS-4530 N68-32764

DIMENHYDRINATE
ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN
RAE-LIB-TRANS-1298 N68-31916

DIPHOSPHATES
RIBULOSE-1, 5-DIPHOSPHATE CARBOXYLASE SYNTHESIS AND DEGRADATION IN HYDROGENEMONAS FACILIS AND HYDROGENEMONAS EUTROPHA, NOTING EFFECTS OF AERATION, FERRIC CHLORIDE AND OXYGEN TENSION A68-38664

DISEASES
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

SYMPATHOADRENAL SYSTEM IN PATIENTS WITH VIBRATION DISEASE A68-81986

DISORDERS
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

DISPLAY DEVICES
IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION A68-81951

HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS A68-81952

DISTRIBUTION (PROPERTY)
CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

DIURNAL VARIATIONS
DIURNAL VARIATIONS OF MUSCLE ACTION POTENTIALS AND WORD ASSOCIATIONS RELATED TO PSYCHOLOGICAL ORIENTATION A68-81996

DOCUMENTATION
REVIEW OF LITERATURE ON BIOLOGICAL RHYTHMS IN PLANTS, ANIMALS AND HUMANS A68-81829

COMPONENTS AND ORIGINS OF MAMMALIAN ELECTRORETINOGRAM - REVIEW A68-81834

DOGS
MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN PRECORONARY REGION OF CANINE CEREBRAL CORTEX AS RESULT OF TRANSVERSE G FORCES A68-38235

SINGLE AND MULTIPLE ACCELERATION EFFECTS ON DOG LUNGS, DISCUSSING CHANGES IN VASCULAR AND PARENCHYMAL STRUCTURE A68-38238

ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

MORPHOLOGICAL CHANGES IN KIDNEYS OF DOGS SUBJECTED TO SINGLE CHEST-TO-BACK ACCELERATIONS A68-38240

LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION A68-38242

DOGS STOMACH AND DUODENUM PERIODIC MOTOR ACTIVITY CHANGES AFTER EXPOSURE TO ACCELERATION FORCES A68-38245

RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS A68-38254

PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

EFFECT OF STARVATION ON METABOLIC BALANCE IN MONGREL AND DALMATIAN DOGS A68-81850

PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM A68-81854

COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

ELECTROENCEPHALOGRAMS OF DOGS EXPOSED TO AUDITORY STIMULI OF VARYING INTENSITIES FOR PROLONGED PERIOD OF TIME A68-81980

DOSIMETERS
FISSION NEUTRON SOURCES AND DOSIMETRY IN TISSUE EQUIVALENT PHANTOM - CALIFORNIUM 252
BNL-12452 N68-31645

HIT THEORY AND MICRODOSIMETRY APPLIED TO RELATIVE BIOLOGICAL EFFECTIVENESS PROBLEM
BNWL-SA-1753 N68-31666

THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE N68-32135

DOSIMETER FOR MEASURING INTENSITY OF DOSE OF X RAY OR GAMMA RAYS OR BOTH USING SEMICONDUCTOR

MATERIAL
NASA-TT-F-11906 N68-32747

TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETER CHARACTERISTICS
BNWL-741 N68-32943

ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS
BNWL-SA-1569 N68-33498

DROSOPHILA
MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER A68-81813

DRUGS
SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS A68-81856

MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

USE OF HYDROQUININE FOR PREVENTION AND TREATMENT OF OXYGEN DEFICIENCY IN CATS A68-81870

ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS A68-81874

CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

ROLE OF VARIOUS PARTS OF NERVOUS SYSTEM AND ENDOCRINE GLANDS IN DEVELOPMENT OF SPECIFIC AND NON-SPECIFIC RESISTANCE OF RATS A68-81943

PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

THYROXINE DEIODINATION DURING COLD EXPOSURE IN RATS AFFECTED BY VARIOUS DRUGS A68-81990

E

EAR
ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203 N68-31454

EAR PROTECTORS
INCREASING MILITARY PROBLEM OF NOISE INCLUDING METHODS OF HEARING MEASUREMENT AND EAR PROTECTION A68-81816

EARDRUMS
HUMAN REACTIONS TO ACOUSTIC SIGNAL TRANSMISSION TO EARDRUM N68-30948

LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064 N68-32659

ECOLOGY
BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767 N68-31737

EDUCATION
MANUAL GUIDANCE IN LEARNING PURSUIT TRACKING TASK A68-81903

EFFECT OF ISOMETRIC-ISOTONIC TRAINING ON SHOT PUT DISTANCE AND MAXIMUM ISOMETRIC STRENGTH IN ATHLETES A68-81925

AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES
NPRA-STB-68-10 N68-31387

SOVIET PROBLEMS IN EDUCATION AND TRAINING, GROUP DYNAMICS, OPERATOR PERFORMANCE, TEACHING MACHINES, AND PSYCHOMETRICS
ATD-68-34-108-2 N68-31447

PROBLEMS AND METHODS OF LEARNING AND TRAINING
AD-671060 N68-31583

EFFERENT NERVOUS SYSTEMS
EFFERENT IMPULSATION OF VAGUS OF RABBITS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS A68-38225

PHYSIOLOGICAL MECHANISMS FOR SELF-REGULATION OF HIGHER NERVOUS ACTIVITY IN ANIMALS AND MAN
FTD-HT-23-808-67 N68-32030

EGGS
WEIGHTLESSNESS EFFECT ON FERTILIZED FROG EGG ABILITY TO DIVIDE, DIFFERENTIATE AND DEVELOP NORMALLY A68-39268

EJECTION INJURIES
CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

ELECTRIC CURRENT
DELETERIOUS EFFECTS OF ELECTRIC CURRENTS ON HUMAN SYSTEM A68-38581

ELECTRIC POTENTIAL
HORIZONTAL ELECTROOCULOGRAPHIC POTENTIAL OPERANT CONDITIONING OF EYE MOVEMENT IN MONKEYS / MACACA NEMESTRINA/ A68-38659

ELECTRIC STIMULI
TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS A68-38218

VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

ELECTRIC STIMULI OF DOGS TO STUDY FUNCTIONAL STRUCTURE OF TEMPORARY CONNECTION IN AVOIDANCE REACTIONS
NS-59 N68-31791

ELECTRO-OPTICS
HORIZONTAL ELECTROOCULOGRAPHIC POTENTIAL OPERANT CONDITIONING OF EYE MOVEMENT IN MONKEYS / MACACA NEMESTRINA/ A68-38659

ELECTROCARDIOGRAPHY
ELECTROCARDIOGRAPHIC ACTIVITY DURING MENTAL AND EMOTIONAL STRESS A68-81982

RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751 N68-32100

ELECTRODES
ELECTRODE PROBLEMS IN RECORDING SKIN RESPONSES IN FREELY MOVING SUBJECTS NOTING IMPLANTATION, ELECTROMECHANICAL AND RADIO SIGNAL INTERFERENCE A68-38517

ELECTROENCEPHALOGRAPHY
ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE TO EVALUATE ASTRONAUTS CENTRAL NERVOUS SYSTEM FUNCTIONAL STATE A68-38215

ELECTROENCEPHALOGRAM CLASSIFICATION REGARDING PILOT SELECTION A68-38264

SUBCORTICAL AND CORTICAL ELECTROENCEPHALOGRAPHIC CORRELATION IN MAN - COMPUTER STUDY A68-81885

CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS A68-81913

VISUALLY EVOKED RESPONSES IN HUMANS BY LOCALIZED RETINAL STIMULATION A68-81920

ELECTROMYOGRAPHIC AND ELECTROENCEPHALOGRAPHIC RESPONSES OF HUMANS PERFORMING VARIOUS MOTOR TASKS A68-81934

SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS A68-81935

ALPHA BLOCKING IN HUMANS DURING VISUAL AFTERIMAGES AS RELATED TO ATTENTION A68-81936

INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

ELECTROENCEPHALOGRAMS OF DOGS EXPOSED TO AUDITORY STIMULI OF VARYING INTENSITIES FOR PROLONGED PERIOD OF TIME A68-81980

ELECTROMAGNETIC FIELDS
INSULATED-LABORATORY TESTS OF EFFECTS OF WEAK TERRESTRIAL ELECTROMAGNETIC RADIATION ON CIRCADIAN PERIODICITY OF MAN N68-32150

ELECTROMYOGRAPHY
ELECTROMYOGRAPHIC AND ELECTROENCEPHALOGRAPHIC RESPONSES OF HUMANS PERFORMING VARIOUS MOTOR TASKS A68-81934

ELECTROMYOGRAMS IN RELATION TO SYNCHRONIZATION OF MOTOR NEURONS IN HEALTHY AND DISEASED PERSONS A68-81940

DIURNAL VARIATIONS OF MUSCLE ACTION POTENTIALS AND WORD ASSOCIATIONS RELATED TO PSYCHOLOGICAL ORIENTATION A68-81996

ELECTRON IRRADIATION
BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS N68-32134

ELECTROPHYSIOLOGY
ELECTROPHYSIOLOGICAL STUDY OF CONDITIONED REACTIONS TO TIME IN HUMANS A68-81981

ELECTROPLETHYSMOGRAPHY
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT NASA-CR-92220 N68-32973

ELECTRORETINOGRAPHY
COMPONENTS AND ORIGINS OF MAMMALIAN ELECTRORETINOGRAM - REVIEW A68-81834

EMERGENCIES
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR A68-81949

EMOTIONAL FACTORS
EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING TR-12 N68-31881

EMOTIONS
ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

ENDOCRINE GLANDS
ROLE OF VARIOUS PARTS OF NERVOUS SYSTEM AND ENDOCRINE GLANDS IN DEVELOPMENT OF SPECIFIC AND NON-SPECIFIC RESISTANCE OF RATS A68-81943

ENDOCRINE SYSTEMS
LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

ENDOTHELIUM
INVOLVEMENT OF OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF RETICULOENDOTHELIAL SYSTEM IN RATS A68-81909

ENERGY DISSIPATION
RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

ENERGY REQUIREMENTS
ENERGY CONSIDERATIONS AS DETERMINANTS OF SYSTEM DESIGN IN MAN MACHINE SYSTEMS A68-81953

ENTOMOLOGY
COMPARISON OF INSECTS FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT ANGELS P-14 N68-31442

ENTROPY
TEMPERATURE-ENTROPY DIAGRAM FOR 80-20 OXYGEN-NITROGEN SPACE CABIN ATMOSPHERE A68-37183

ENVIRONMENTAL TESTS
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA A68-38284

PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH A68-38321

PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT COMPATIBLE WITH SERVICEABILITY REQUIREMENTS A68-38482

ENZYME ACTIVITY
RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS A68-38254

RIBULOSE-1, 5-DIPHOSPHATE CARBOXYLASE SYNTHESIS AND DEGRADATION IN HYDROGENEMONAS FACILIS AND HYDROGENEMONAS EUTROPHA, NOTING EFFECTS OF AERATION, FERRIC CHLORIDE AND OXYGEN TENSION A68-38664

EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY A68-81825

EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

OPTIONAL SCHEME FOR ERYTHROCYTE MECHANISMS IN CARBON DIOXIDE TRANSPORT A68-81849

ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

EPITHELIUM
HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

EQUATIONS OF MOTION
SOLVING EQUATIONS OF MOTION TO OBTAIN RELATIONSHIP BETWEEN RANDOM CREW MOTIONS AND ANGULAR CHANGE IN SPACECRAFT ORIENTATION N68-32043

EQUIPMENT SPECIFICATIONS
DESIGN OF SUBMINIATURE CRYSTAL CONTROLLED BIOLOGICAL TRANSMITTER FOR INTERNAL OR EXTERNAL USE A68-81814

PROTECTIVE ARMOR AGAINST BULLETS FOR FLYING PERSONNEL A68-81815

EFFECT OF MICROWAVES AT X BAND ON GUINEA PIG SKIN IN TISSUE CULTURE - MICROWAVE APPARATUS FOR EXPOSING TISSUE AND EFFECT OF RADIATION ON SKIN RESPIRATION A68-81928

SYSTEMS AND TEST SPECIFICATIONS FOR DEVELOPING SPACE RESEARCH HUMAN CENTRIFUGE ENGINEERING PROTOTYPE FOR APOLLO APPLICATIONS PROGRAM ORBITAL ONBOARD EXPERIMENT
NASA-CR-66650 N68-33297

ERROR ANALYSIS
HUMAN ERROR MEASUREMENT TECHNIQUE USING USAF MAINTENANCE DATA A68-37616

HUMAN ERRORS ARISING IN MANNED AIRCRAFT SYSTEMS, INVESTIGATING EFFECTS OF FATIGUE, MICROSLEEP, PSYCHOLOGICAL CAUSES, ETC A68-38510

ERYTHROCYTES
ERYTHROCYTE OSMOTIC RESISTIVITY CHANGES DURING HIGH MOUNTAIN ACCLIMATIZATION OF MOUNTAIN CLIMBERS AND ATHLETES A68-38294

HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY A68-38295

OPTIONAL SCHEME FOR ERYTHROCYTE MECHANISMS IN CARBON DIOXIDE TRANSPORT A68-81849

DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

ESCHERICHIA
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE A68-81912

ESTIMATING
ESTIMATION OF VEHICULAR VELOCITY AS FUNCTION OF VISUAL STIMULATION A68-81950

ETHERS
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY A68-38771

ETHYL ALCOHOL
ALCOHOL AS CONTRIBUTORY FACTOR IN MILITARY AIRCRAFT ACCIDENT FATALITIES FROM POSTMORTEM TOXICOLOGICAL DATA A68-38092

EFFECT OF ETHYL ALCOHOL ON NUMBER AND VIABILITY OF ALVEOLAR MACROPHAGES IN MICE LUNGS A68-81930

ACUTE ANTILIPOLYTIC EFFECTS OF ETHYL ALCOHOL AND ACETATE IN HUMAN BEINGS A68-81932

ETHYLENE
EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLOROETHYLENE IN ADULT AND NEWBORN RATS A68-81890

EVACUATING (TRANSPORTATION)
AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON REGULAR AIRLINE AIRCRAFT A68-38897

EVALUATION
COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR A68-81877

METHOD OF EVALUATING LARGE NUMBERS OF SYSTEM ALTERNATIVES IN MAN MACHINE SYSTEM SITUATIONS A68-81947

PARAMETRIC PERFORMANCE ANALYSIS OF OXYGEN TRANSPORT SYSTEM A68-81958

EXCRETION
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION IN HUMANS A68-81841

HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION A68-81844

EXCRETION OF BILE ACIDS IN RABBITS DURING FUNCTIONAL STRESS OF NERVOUS SYSTEM OF INTENSE ACTIVITY A68-81883

INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS A68-81931

VALIDITY OF UROPEPSIN EXCRETION IN URINE IN MAN AS AN OBJECTIVE TEST INDEX OF FATIGUE IN AEROSPACE MEDICINE A68-82006

CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

EXERCISE (PHYSIOLOGY)
CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

EXOBIOLOGY
SPACE BIOLOGY, SURVEYING BASIC STRESS BIOLOGY A68-37064

SOVIET COLLECTION OF PAPERS ON SPACE BIOLOGY, VOLUME 7, COVERING WORK ACTIVITY AND BIOTECHNOLOGY A68-38267

BIOLOGY IN SPACE - CONFERENCE, CAMBRIDGE, ENGLAND, JULY 1967 A68-39680

ORBITAL SPACE STATION EXPERIMENTS FOR STUDYING SPACE ENVIRONMENT AND EFFECTS ON TERRESTRIAL LIFE, NOTING CURRENT BIOMEDICAL INFORMATION A68-39684

N ASA PROGRAM OUTLINE ON RESEARCH AND DEVELOPMENT RELATED TO BIOLOGICAL SPACE EXPLORATION N68-32132

CRITICAL ANALYSIS OF PANSPERMIA THEORY IN VIEW OF RECENT SPACE FLIGHT DEVELOPMENTS N68-32139

EXPERIMENTAL DESIGN
EXPERIMENTAL PROGRAM TO STUDY ORDERED SEQUENCES OF ACTION WITH LIKE MOTIVE ACT SETS, SAME NUMBER OF ELEMENTS AND DIFFERING IN GROUP DIMENSIONALITY A68-38271

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

EXPIRED AIR
GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

EXPLOSIVES
LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064 N68-32659

EXTRASENSORY PERCEPTION
SUMMARY INFORMATION ON SOVIET RESEARCH IN TELEPATHY AND APPLICATION OF COMMUNICATION THEORY TECHNIQUES TO TELEPATHIC COMMUNICATION N68-32034

METHODS AND RESULTS OF EARLY AND RECENT SOVIET THEORETICAL AND EXPERIMENTAL RESEARCH IN TELEPATHY N68-32035

ANALYSIS OF SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION BASED ON FRAMEWORK OF INFORMATION AND COMMUNICATION THEORIES N68-32036

EXTRATERRESTRIAL LIFE
MARTIAN LIFE THEORIES, DISCUSSING NEAR GROUND ATMOSPHERE AND SURFACE LAYER OF LITHOSPHERE A68-37065

BIOLOGICALLY ORIENTED COSMOLOGICAL THEORY ASSUMING BIOLOGICAL FIELD THEORY, DISCUSSING DETECTION OF EXTRATERRESTRIAL LIFE AND COMMUNICATION A68-37808

EXTRATERRESTRIAL RADIATION
CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMWF-FB-W-68-30 N68-32131

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE N68-32133

THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE N68-32135

EXTRAVEHICULAR ACTIVITY
SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

EYE (ANATOMY)
ELECTRICAL SENSITIVITY OF EYE EXPOSED TO INTENSIVE PHOTIC STIMULUS A68-81984

EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING AS AFFECTED BY OPTIC STIMULI A68-81993

CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS N68-32154

EYE DISEASES
FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS A68-82014

EYE EXAMINATIONS
FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS A68-82014

RETINAL FLUORESCENCE ANGIOGRAPHY
SAM-TR-68-21 N68-32995

EYE MOVEMENTS
HORIZONTAL ELECTROOCULOGRAPHIC POTENTIAL OPERANT CONDITIONING OF EYE MOVEMENT IN MONKEYS / MACACA NEMESTRINA/ A68-38659

VISUAL SUPPRESSION DURING PASSIVE EYE MOVEMENT COMPARED TO ACTIVE EYE MOVEMENT TO DETERMINE ORIGIN AS RETINAL OR CENTRAL A68-39106

DEPENDENCE OF AMPLITUDE OF FUSIONAL CONVERGENCE MOVEMENTS ON VELOCITY OF ELICITING FOVEAL STIMULI A68-81842

DISCHARGE OF FRONTAL EYE FIELD NEURONS DURING SACCADIC AND FOLLOWING EYE MOVEMENTS IN UNANESTHETIZED MONKEYS A68-81914

EFFECTS OF L-HYOSCINE HYDROBROMIDE ON POST ROTARY SENSATION AND NYSTAGMUS IN HUMANS A68-81926

EFFECT OF REPETITION ON MEASUREMENTS OF POST-ROTATIONAL TURNING SENSATION AND NYSTAGMUS IN HUMANS AFTER DECELERATION FROM CONSTANT ANGULAR VELOCITIES A68-81927

VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS A68-81961

COORDINATION OF MOVEMENTS OF EYES AND HAND IN VARIOUS MOTOR TASKS A68-81978

PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS N68-32154

EYE PROTECTION
OCCURRENCE OF CATARACTS IN WORKERS EXPOSED TO HEAT AND GLARE A68-81864

F

FAR FIELDS
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

FATIGUE (BIOLOGY)
REVIEW OF EFFECTS OF SLEEP DEPRIVATION IN HUMANS A68-81843

BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

VALIDITY OF UROPEPSIN EXCRETION IN URINE IN MAN AS AN OBJECTIVE TEST INDEX OF FATIGUE IN AEROSPACE MEDICINE A68-82006

FATTY ACIDS
EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

FECES
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

BILIARY-FECAL EXCRETION OF THYROXINE DURING COLD EXPOSURE IN RAT A68-81989

FEEDBACK
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

FINGERS
TIME CHARACTERISTICS OF FINGER MOTIONS OF EACH HAND WHEN TEST SUBJECTS CHOSE RATES OF MOTION A68-38275

EFFECT OF STIMULUS REPETITIONS AND ALTERATIONS ON ONE-FINGER AND TWO-FINGER RESPONDING IN TWO-CHOICE REACTION TIME TO VISUAL STIMULI IN HUMANS A68-81992

DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

FISHES
TILAPIA FISH AS POSSIBLE COMPONENT OF SPACECRAFT LIFE SUPPORT SYSTEMS A68-38324

GROWTH OF TILAPIA FISH KEPT ON NORMAL ANIMAL, MIXED AND VEGETABLE FOOD A68-38325

GROWTH OF TILAPIA FISH KEPT ON DRY CHLORELLA DIET COMBINED WITH OTHER FODDER A68-38326

VIBRATIONAL AND LINEAR ACCELERATIONS EFFECTS ON FISH NOTING FREQUENCY OF VIBRATION ROLE A68-38327

CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS
NASA-CR-96453 N68-33555

FLASH BLINDNESS
INTRAOCULAR EFFECTS ON FLASH BLINDNESS, MEASURING DISPLAY DETECTION TIMES FOLLOWING LIGHT ADAPTATION AREAS EXPOSURE IN VARIOUS RETINAL LOCATIONS A68-38091

FLICKER
VISIBILITY OF FLICKERING STABILIZED RETINAL IMAGE IN HUMANS A68-81836

FLIGHT CHARACTERISTICS
STATISTICAL PUBLIC OPINION RESEARCH TO CHECK RELIABILITY OF PILOT OPINIONS ON AIRCRAFT FLIGHT CHARACTERISTICS
ICAS PAPER 68-17 A68-39209

HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS A68-81952

FLIGHT CLOTHING
PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT COMPATIBLE WITH SERVICEABILITY REQUIREMENTS A68-38482

FLIGHT CREWS
AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

SUMMARY INFORMATION AND COMPARISON OF CURRENT AND FUTURE AIRCREW TRAINING PROGRAMS
DELTA-22 N68-31875

FLIGHT FATIGUE
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS A68-82008

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

FLIGHT FITNESS
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

STATISTICAL STUDY OF SKULL TRAUMATISMS AND MEDICAL STANDARDS OF FLIGHT FITNESS A68-82007

FLIGHT SIMULATION
HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

FLIGHT SIMULATORS
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

FLIGHT STRESS (BIOLOGY)
NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS N68-32154

FLIGHT SURGEONS
FLIGHT SURGEONS DUTIES IN UNITED STATES ARMY AVIATION MISSIONS IN REPUBLIC OF VIETNAM A68-81839

FLIGHT TRAINING
SUMMARY INFORMATION AND COMPARISON OF CURRENT AND FUTURE AIRCREW TRAINING PROGRAMS
DELTA-22 N68-31875

FLOW MEASUREMENT
TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

FLUORESCENCE
RETINAL FLUORESCENCE ANGIOGRAPHY
SAM-TR-68-21 N68-32995

FLYBY MISSIONS
CHARACTERISTICS, CONSTRAINTS, AND IMPLICATIONS OF LONG DURATION SPACE MISSIONS BASED ON USE OF AVAILABLE HARDWARE AND MAINTENANCE/REPAIR ACTIONS IN SPACE
NASA-CR-73239 N68-32163

FLYING PERSONNEL
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

PROTECTIVE ARMOR AGAINST BULLETS FOR FLYING PERSONNEL A68-81815

STATISTICAL STUDY OF SKULL TRAUMATISMS AND MEDICAL STANDARDS OF FLIGHT FITNESS A68-82007

ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203 N68-31454

FOOD
CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS A68-38305

FOOD RATIONS FOR ASTRONAUTS ON LONG DURATION SPACE FLIGHTS
JPRS-46002 N68-31511

FOOD INTAKE
MATHEMATICAL METHOD TO SELECT FOOD RATION WITH PRESCRIBED COMPOSITION AND CALORIFIC VALUE FROM LIMITED ASSORTMENT OF PRODUCTS A68-38306

EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION IN HUMANS A68-81841

HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION A68-81844

BODY COMPOSITION CHANGES IN OBESE HUMANS DURING INTERMITTENT STARVATION A68-81846

BROMSULPHALEN RETENTION TEST DURING PROLONGED FASTS RELATED TO CHANGES IN PLASMA VOLUME OF OBESE HUMANS A68-81847

EFFECT OF STARVATION ON PLASMA IMMUNOREACTIVE INSULIN AND NONSUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS A68-81848

EFFECT OF STARVATION ON METABOLIC BALANCE IN MONGREL AND DALMATIAN DOGS A68-81850

INVOLVEMENT OF OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF RETICULOENDOTHELIAL SYSTEM

IN RATS A68-81909

EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS A68-81931

FOVEA
DEPENDENCE OF AMPLITUDE OF FUSIONAL CONVERGENCE MOVEMENTS ON VELOCITY OF ELICITING FOVEAL STIMULI A68-81842

FREQUENCY RANGES
FREQUENCY SPECTRA IN VARIOUS BRAIN REGIONS OF RABBITS AND HUMANS AND THEIR CHANGES DURING VESTIBULAR AND OPTOKINETIC STIMULI A68-81944

FROGS
WEIGHTLESSNESS EFFECT ON FERTILIZED FROG EGG ABILITY TO DIVIDE, DIFFERENTIATE AND DEVELOP NORMALLY A68-39268

MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

G

GALACTIC RADIATION
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

GALL
EXCRETION OF BILE ACIDS IN RABBITS DURING FUNCTIONAL STRESS OF NERVOUS SYSTEM OF INTENSE ACTIVITY A68-81883

GALLAMINE TRIETHIODIDE
EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

GALVANIC SKIN RESPONSE
TASK COMPLEXITY, ELECTRODERMAL ACTIVITY, AND REACTION TIME IN HUMANS A68-81994

COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE
TR-25 N68-31335

GAMMA GLOBULIN
HIGH AND LOW INTENSITIES OF LASER IRRADIATION ON SEROLOGIC PROPERTIES OF HUMAN AND RABBIT GAMMA GLOBULIN A68-81896

GAMMA RAYS
GAMMA RADIATION EXPOSURE AND WEIGHTLESSNESS EFFECTS COMPARED FOR BIOLOGICAL MATERIAL DURING BIOSATELLE 2 FLIGHT AND IN EARTH CONTROL CAPSULE, NOTING RADIATION SOURCES A68-37453

SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION A68-38260

GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

DOSIMETER FOR MEASURING INTENSITY OF DOSE OF X RAY OR GAMMA RAYS OR BOTH USING SEMICONDUCTOR MATERIAL
NASA-TT-F-11906 N68-32747

COMBINED EFFECTS OF VIBRATION AND GAMMA RADIATION ON VESTIBULAR APPARATUS OF GUINEA PIGS N68-33286

GAS COMPOSITION
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

GAS DISCHARGES
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

GAS EXCHANGE
GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

DESIGN OF AIR PASSAGES RELATED TO GAS MOVEMENT IN ALVEOLAR VENTILATION A68-81915

GAS MIXTURES
HELIUM-OXYGEN MIXTURE BREATHING EFFECTS ON VOCAL FREQUENCY AND AMPLITUDE, NOTING SUBSTANTIAL QUALITY DETERIORATION OF COMMUNICATIONS A68-38287

GAS TRANSPORT
TONAWANDA 2 MODEL OF INERT GAS TRANSPORT FOR PREDICTING INCIDENCE OF DECOMPRESSION SICKNESS IN FLIGHT PROFILES
NASA-CR-92212 N68-31215

GASEOUS DIFFUSION
DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT
NASA-CR-66637 N68-31243

GASES
GASEOUS TOXIC SUBSTANCES LIBERATED BY HUMAN URINE AT 38 C AND BY SAMPLES STORED AT 18 TO 20 C A68-38315

GAS INERTANCE AND BAROMETRIC PRESSURE - MATHEMATICAL METHODS OF MEASUREMENT A68-82013

GASTROINTESTINAL SYSTEM
DOGS STOMACH AND DUODENUM PERIODIC MOTOR ACTIVITY CHANGES AFTER EXPOSURE TO ACCELERATION FORCES A68-38245

AMMONIA IN GASTRIC JUICE OF PATIENTS WITH CHRONIC INTOXICATION BY NITRODERIVATIVES OF BENZENE AND ITS HOMOLOGUES A68-81987

CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

GENERALIZATION (PSYCHOLOGY)
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

GLARE
CRITICAL FLICKER FUSION FREQUENCY USED AS A METHOD OF DETERMINATION OF EFFECT OF GLARE IN MAN A68-81904

GLIDERS
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS A68-82008

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

GLUCOSE
EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

GLYCOLYSIS
ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS A68-81874

GNOTOBIOTICS
LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS A68-81906

PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE A68-81908

GOATS
RELEVANT PHASE CONDITIONS FOR PREDICTING OCCURRENCE OF DECOMPRESSION SICKNESS IN GOATS A68-81861

GRAVITATIONAL EFFECTS
CONTINUOUSLY VARYING GRAVITATIONAL FIELD FOR STUDYING WEIGHTLESSNESS EFFECTS ON GROWTH AND DEVELOPMENT OF CREEPER PLANT A68-37242

SOVIET COLLECTION OF ARTICLES ON SPACE BIOLOGY, VOLUME 6, COVERING GRAVITATIONAL AND PHYSIOLOGICAL EFFECTS, HUMAN RESPONSE, ETC A68-38213

DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE A68-38221

ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

CATS AND RABBITS OXYGEN CONTENT IN BRAIN TISSUES MEASURED UNDER G FORCES NOTING DEPENDENCE ON MAGNITUDE AND DIRECTION A68-38234

MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN PRECORONARY REGION OF CANINE CEREBRAL CORTEX AS RESULT OF TRANSVERSE G FORCES A68-38235

WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES A68-38248

VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

CHANGING GRAVITY CONDITIONS EFFECTS ON HUMAN COORDINATION INDICES, NOTING ACCURACY OF CONTROL LEVER OPERATION BLINDFOLDED OR BY VISUAL CONTROL A68-38279

WEIGHTLESSNESS SIMULATION AND STUDIES OF EFFECTS ON MICROORGANISMS, ALGAE, AND INSECTS N68-32142

GROUP DYNAMICS
INTER AND INTRA-INDIVIDUAL DESYNCHRONIZATION AND BEHAVIOR STUDIED IN ISOLATED GROUP EXPERIMENT N68-32151

GROWTH
PROLONGED ORGANOTROPHIC GROWTH OF HYDROGENOMONAS H 16 IN CHEMOSTATS A68-81918

SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

GUINEA PIGS
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

EFFECT OF MICROWAVES AT X BAND ON GUINEA PIG SKIN IN TISSUE CULTURE - MICROWAVE APPARATUS FOR EXPOSING TISSUE AND EFFECT OF RADIATION ON SKIN RESPIRATION A68-81928

EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

EFFECTS OF VIBRATION AND GAMMA, IONIZING, OR X RAY RADIATION ON GUINEA PIGS AND MICE
FTD-MT-24-142-67 N68-33285

COMBINED EFFECTS OF VIBRATION AND GAMMA RADIATION ON VESTIBULAR APPARATUS OF GUINEA PIGS N68-33286

COMBINED EFFECTS OF VIBRATION AND IONIZING RADIATION ON FUNCTIONAL STATE OF SPINAL REFLEX ARC OF GUINEA PIGS N68-33287

H

HABITUATION (LEARNING)
DECREMENT IN PERFORMANCE IN VIGILANCE TASKS RELATED TO HABITUATION OF NEURAL RESPONSES TO BACKGROUND EVENTS A68-82002

HAMSTERS
SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

HAZARDS
DELETERIOUS EFFECTS OF ELECTRIC CURRENTS ON HUMAN SYSTEM A68-38581

HEAD MOVEMENT
SIDE TO SIDE HEAD VIBRATION EFFECTS ON VISUAL ACUITY MEASUREMENTS
NASA-CR-96466 N68-33093

HEALTH
HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

HEART DISEASES
EFFECT OF EXERCISE ON PREVENTION AND THERAPY OF CORONARY HEART DISEASE A68-81828

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS A68-81853

HEART FUNCTION
LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS A68-81906

HEART RATE
BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

HEAT
MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS A68-81856

HEAT TOLERANCE
EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON

HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

HEAT TRANSFER
HEAT AND MASS FLOW RATE THROUGH SEVERAL TYPES OF COMPOSITE CLOTHING UNDER SIMULATED CONDITIONS
TR-68-44-CM N68-32519

HEAT TREATMENT
SPACE VEHICLE STERILIZATION AND DECONTAMINATION, DISCUSSING DRY HEAT STERILIZATION AND CAPSULE SYSTEM ADVANCED DEVELOPMENT A68-38078

HEAVY IONS
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

HELICOPTER PERFORMANCE
VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

HELICOPTERS
ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

HEMATOPOIETIC SYSTEM
IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

HEMODYNAMIC RESPONSES
HEMODYNAMIC DISTURBANCES OCCURRING DURING EXPERIMENTAL PULMONARY EMBOLISM IN CATS AND DOGS UNDER HYPOTHERMIC CONDITIONS AND USE OF GANGLION BLOCKERS A68-81882

HETEROCYCLIC COMPOUNDS
HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS N68-32147

HETEROGENEITY
EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER A68-81822

HETEROTROPHS
HETEROTROPHIC ORGANISMS AS HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS A68-38307

HIBERNATION
SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

HIGH ALTITUDE ENVIRONMENTS
HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

EFFECT OF 14,000 FT ALTITUDE ON PROTEIN METABOLISM IN HUMANS A68-81845

HIGH ALTITUDE PRESSURE
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

HIGH ALTITUDE TESTS
TESTOSTERONE PRODUCTION AND HORMONE METABOLISM OF MEN IN HIGH ALTITUDE ENVIRONMENTS
AR-2 N68-31059

HIGH PRESSURE OXYGEN
HIGH PRESSURE OXYGEN BREATHING TECHNIQUES AND TRAINING, PHYSIOLOGY AND HIGH ALTITUDE EMERGENCY DESCENT SURVIVAL A68-38288

RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM
SMRL-519 N68-31382

HIGH TEMPERATURE ENVIRONMENTS
BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

ROLE OF CELLULAR MECHANISMS IN ADAPTATION OF ANIMALS TO HIGH TEMPERATURES A68-81945

HISTOLOGY
REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION A68-38243

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

HISTOPATHOLOGIC BASIS OF DISORDERS OF PERIPHERAL VESTIBULAR SYSTEM PRODUCING VERTIGO A68-81811

HISTOLOGICAL DISTRIBUTION AND RETENTION OF LEAD, RADIOACTIVE SULFUR, AND RADIOACTIVE CALCIUM IN NEW COMPACT BONE SUBSTANCE
NASA-TT-F-11862 N68-31591

HORIZON
EGOCENTRIC LOCALIZATION OF VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE DEFECTIVE OBSERVERS FOR VARIOUS HEAD AND BODY TILTS A68-39327

HORMONE METABOLISMS
TESTOSTERONE PRODUCTION AND HORMONE METABOLISM OF MEN IN HIGH ALTITUDE ENVIRONMENTS
AR-2 N68-31059

HUMAN BEHAVIOR
EXPERIMENTAL PROGRAM TO STUDY ORDERED SEQUENCES OF ACTION WITH LIKE MOTIVE ACT SETS, SAME NUMBER OF ELEMENTS AND DIFFERING IN GROUP DIMENSIONALITY A68-38271

HUMAN METHOD OF ORGANIZING ACTIVITY, DISCUSSING DECISION MAKING FOR NEXT ACTION WHILE ESTIMATING PRECEDING ACTIONS WITH SIMULTANEOUS CONSIDERATION OF INSTANTANEOUS SIGNAL A68-38273

HUMAN BEINGS
CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34 N68-32088

RESPONSES OF HUMAN SUBJECTS TO ACUTE COLD EXPOSURE RELATED TO METABOLISM N68-32256

HUMAN BODY
X RAY PHOTOGRAPHS OF HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS, ANALYZING CHEST FLATTENING, DIAPHRAGM POSITION AND MEDIASTINAL ORGANS A68-38237

EXPERIMENTS AND ASSOCIATED HYPOTHESES CONCERNING METHODS OF ORGANIZING HUMAN MOTOR ACTIVITY A68-38270

HYPODYNAMIA EFFECT ON NITROGEN METABOLISM AND MEANING OF PROPORTIONED PHYSICAL LOADS FOR CONSERVATION OF NITROGEN EQUILIBRIUM A68-38302

CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

DELETERIOUS EFFECTS OF ELECTRIC CURRENTS ON HUMAN SYSTEM A68-38581

THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM
N68-32149

TRIAXIAL MULTIPLE CHANNEL ACCELEROMETER MODULE FOR VESTIBULAR STIMULATION MEASUREMENTS IN AIRCRAFT
NASA-CR-96298 N68-32734

HUMAN CENTRIFUGES
MANNED ORBITAL LABORATORY CENTRIFUGE RADIUS EFFECTS ON ASTRONAUT PERFORMANCE OF ENTRY TASKS FROM APOLLO ENTRY SIMULATION TESTS
A68-38088

INTERACTION OF SEMICIRCULAR CANALS AND OTOLITHIC APPARATUS FROM SENSORY AND NYSTAGMIC REACTIONS OF HUMANS SUBJECTED TO POSITIVE AND NEGATIVE ACCELERATION A68-38226

PSYCHOLOGICAL ASPECTS OF MANNED SPACE FLIGHT AND PROBLEMS IN RELIABILITY IMPROVEMENT, NOTING CENTRIFUGE ACCELERATION TRAINING AND CONDITIONING
A68-39683

FEASIBILITY AND DESIGN CONFIGURATION OF ORBITAL ONBOARD CENTRIFUGE FOR HUMAN PHYSIOLOGICAL EXPERIMENTS DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66649 N68-33296

SYSTEMS AND TEST SPECIFICATIONS FOR DEVELOPING SPACE RESEARCH HUMAN CENTRIFUGE ENGINEERING PROTOTYPE FOR APOLLO APPLICATIONS PROGRAM ORBITAL ONBOARD EXPERIMENT
NASA-CR-66650 N68-33297

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

HUMAN FACTORS ENGINEERING
AUTOMATIC DATA PROCESSING SYSTEM FOR STUDIES OF HUMAN EXTERNAL RESPIRATION FUNCTION PERMITTING RESPIRATORY SYSTEM CONDITION CONTROL
A68-38265

HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS A68-81952

HUMAN FACTORS AND MANS ROLE IN MAN MACHINE SYSTEMS APPLIED TO ALLOCATIVE DECISION MAKING
AD-671128 N68-31149

SOVIET PROBLEMS IN EDUCATION AND TRAINING, GROUP DYNAMICS, OPERATOR PERFORMANCE, TEACHING MACHINES, AND PSYCHOMETRICS
ATD-68-34-108-2 N68-31447

PROBLEMS AND METHODS OF LEARNING AND TRAINING
AD-671060 N68-31583

VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY
NASA-CR-96290 N68-33241

MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

HUMAN PERFORMANCE
HUMAN ERROR MEASUREMENT TECHNIQUE USING USAF MAINTENANCE DATA A68-37616

WATER IMMERSION AND BODY POSITION EFFECTS ON HUMAN PERFORMANCE IN USE OF VESTIBULAR SENSE FOR GRAVITATIONAL VERTICAL PERCEPTION
A68-38084

HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING
A68-38269

ADULT NERVOUS SYSTEM INCORPORATES DESCRIPTION OF TIME INTERVAL SETS FOR AUTOMATIC CONTROL OF RATE OF MOTIONS, DISCUSSING ACCURACY OF ORGANIZED SEQUENCE OF MOTIONS A68-38272

HUMAN METHOD OF ORGANIZING ACTIVITY, DISCUSSING DECISION MAKING FOR NEXT ACTION WHILE ESTIMATING PRECEDING ACTIONS WITH SIMULTANEOUS CONSIDERATION OF INSTANTANEOUS SIGNAL A68-38273

HUMAN ORGANIZATION OF SYSTEM OF ACTIONS WITH RANDOM ALTERNATION OF SIGNALS AND SEARCH AND CHOICE OF ACTIONS A68-38274

TIME CHARACTERISTICS OF FINGER MOTIONS OF EACH HAND WHEN TEST SUBJECTS CHOSE RATES OF MOTION
A68-38275

EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS
A68-38276

COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

CHANGING GRAVITY CONDITIONS EFFECTS ON HUMAN COORDINATION INDICES, NOTING ACCURACY OF CONTROL LEVER OPERATION BLINDFOLDED OR BY VISUAL CONTROL
A68-38279

SINUSOIDAL MOTION EFFECTS ON CREW PERFORMANCE DURING SPACE FLIGHT
NASA-CR-92211 N68-31101

HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY
AMRL-TR-67-119 N68-31190

HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING
TR-12 N68-31881

HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY
NASA-CR-96290 N68-33241

MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

HUMAN REACTIONS
ASTRONAUT PROTECTION AGAINST EXTREME TEMPERATURE CHANGES NOTING PHYSIOLOGICAL AND PHYSICAL MECHANISMS FOR ADAPTATION TO COLD AND HEAT
A68-37240

VESTIBULAR CORIOLIS REACTION EFFECT ON HUMAN RESPIRATION AND BLOOD FLOW CHANGES FROM CENTRIFUGE TESTS WITH IMPOSED HEAD NODDING
A68-38087

SOVIET COLLECTION OF ARTICLES ON SPACE BIOLOGY, VOLUME 6, COVERING GRAVITATIONAL AND PHYSIOLOGICAL EFFECTS, HUMAN RESPONSE, ETC
A68-38213

VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE
A68-38220

DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE
A68-38221

PROLONGED ACCELERATION EFFECT ON HUMAN ORGANISM TESTED USING RETINAL BLOOD CIRCULATION OBSERVATIONS
A68-38222

HUMAN VEGETATIVE REACTIONS UNDER ANGULAR ACCELERATIONS NOTING NO DEPENDENCE ON MAGNITUDE
A68-38224

INTERACTION OF SEMICIRCULAR CANALS AND OTOLITHIC APPARATUS FROM SENSORY AND NYSTAGMIC REACTIONS OF HUMANS SUBJECTED TO POSITIVE AND NEGATIVE ACCELERATION
A68-38226

EXPERIMENTAL PROGRAM TO STUDY ORDERED SEQUENCES OF ACTION WITH LIKE MOTIVE ACT SETS, SAME NUMBER OF ELEMENTS AND DIFFERING IN GROUP DIMENSIONALITY
A68-38271

HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE
A68-38285

HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES
A68-38291

MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM
A68-38296

INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING
A68-38297

ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE
A68-38299

HUMAN ERRORS ARISING IN MANNED AIRCRAFT SYSTEMS, INVESTIGATING EFFECTS OF FATIGUE, MICROSLEEP, PSYCHOLOGICAL CAUSES, ETC
A68-38510

ELECTRODE PROBLEMS IN RECORDING SKIN RESPONSES IN FREELY MOVING SUBJECTS NOTING IMPLANTATION, ELECTROMECHANICAL AND RADIO SIGNAL INTERFERENCE
A68-38517

STATISTICAL PUBLIC OPINION RESEARCH TO CHECK RELIABILITY OF PILOT OPINIONS ON AIRCRAFT FLIGHT CHARACTERISTICS
ICAS PAPER 68-17
A68-39209

FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR
A68-81949

HUMAN REACTIONS TO ACOUSTIC SIGNAL TRANSMISSION TO EARDRUM
N68-30948

EXPERIMENTAL MODELS OF RADIOELECTRONIC EQUIPMENT FOR TEMPORAL MEASUREMENTS OF HUMAN REFLEXES
FTD-MT-66-133
N68-31303

PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122
N68-31459

EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING
TR-12
N68-31881

MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION
SMRL-509
N68-31925

HUMAN REACTIONS AND ORGANIZING ACTIVITY IN TIME PERCEPTION FOLLOWING EXPOSURE TO LIGHT SIGNALS
RTS-4099
N68-32582

AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193
N68-33005

HUMAN TOLERANCES
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE
A68-38083

HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE
A68-38220

PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT
A68-38278

HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES
A68-38292

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION
A68-38293

ERYTHROCYTE OSMOTIC RESISTIVITY CHANGES DURING HIGH MOUNTAIN ACCLIMATIZATION OF MOUNTAIN CLIMBERS AND ATHLETES
A68-38294

QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY
A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS
A68-38304

CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS
A68-38305

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE
N68-32133

HYDROGEN SULFIDE
SIGNS AND SYMPTOMS OBSERVED IN HISTORIES OF WORKERS WITH ACUTE HYDROGEN DISULFIDE INTOXICATION
A68-81946

HYDROGENATION
PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF PORPHIN SERIES
RTS-4318
N68-32429

HYDROGENOMONAS
RIBULOSE-1, 5-DIPHOSPHATE CARBOXYLASE SYNTHESIS AND DEGRADATION IN HYDROGENEMONAS FACILIS AND HYDROGENEMONAS EUTROPHA, NOTING EFFECTS OF AERATION, FERRIC CHLORIDE AND OXYGEN TENSION
A68-38664

PROLONGED ORGANOTROPHIC GROWTH OF HYDROGENOMONAS H 16 IN CHEMOSTATS
A68-81918

HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS
N68-32141

HYDROXIDES
GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS
N68-32140

HYGIENE
ASTRONAUT PERSONAL HYGIENE REQUIREMENTS FOR NORMAL SKIN FUNCTIONING DURING PROLONGED SPACE FLIGHTS
A68-38312

HYOSCINE
EFFECTS OF L-HYOSCINE HYDROBROMIDE ON POST ROTARY SENSATION AND NYSTAGMUS IN HUMANS
A68-81926

HYPEROXIA
CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA
A68-38284

HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY
A68-38295

MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

HYPERTHERMIA
PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

HYPOTHERMIA
HEMODYNAMIC DISTURBANCES OCCURRING DURING EXPERIMENTAL PULMONARY EMBOLISM IN CATS AND DOGS UNDER HYPOTHERMIC CONDITIONS AND USE OF GANGLION BLOCKERS A68-81882

HYPOXIA
ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES A68-38232

CATS AND RABBITS OXYGEN CONTENT IN BRAIN TISSUES MEASURED UNDER G FORCES NOTING DEPENDENCE ON MAGNITUDE AND DIRECTION A68-38234

HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE A68-38285

PHYSIOLOGICAL EFFECTS IN RATS OF SUBSTITUTING HELIUM FOR NITROGEN UNDER HYPOXIA AND HIGH CARBON DIOXIDE CONCENTRATIONS A68-38286

NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA A68-38289

HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION A68-38290

HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE A68-81851

IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE A68-81852

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS A68-81853

MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

USE OF HYDROQUININE FOR PREVENTION AND TREATMENT OF OXYGEN DEFICIENCY IN CATS A68-81870

CHANGES IN RESPIRATION, OXYGEN TRANSPORT FUNCTION OF BLOOD AND OXYGEN PARAMETERS OF YOUNG HUMANS DURING HYPOXIA A68-81872

INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA
AR-2 N68-30963

I

ILLUSIONS
SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

ILLUSIONS AND SIZE CONSTANCY A68-81817

IMPLANTATION
RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN
SAM-TR-68-33 N68-31396

INDEXES (DOCUMENTATION)
VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

ANNOTATED BIBLIOGRAPHY AND INDEXES ON AEROSPACE MEDICINE AND BIOLOGICAL EFFECTS - JULY 1968
NASA-SP-7011/52/ N68-32707

INDUCTION (MATHEMATICS)
INDUCTIVE INFERENCE RESEARCH
RTB-155 N68-32078

INERTIA
GAS INERTANCE AND BAROMETRIC PRESSURE - MATHEMATICAL METHODS OF MEASUREMENT A68-82013

INFORMATION RETRIEVAL
VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

INFORMATION LOSS IN VISUAL PREPERCEPTUAL SYSTEM N68-32309

INFORMATION THEORY
THEORETICAL EXPRESS DERIVED FOR LEAST DISTINGUISHABLE STEP IN NUMBER OF PULSES FROM AREA WHOSE IMAGE IS FOCUSED ON AND MEASURED BY SINGLE PHOTOEMISSIVE DETECTOR A68-81999

ANALYSIS OF SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION BASED ON FRAMEWORK OF INFORMATION AND COMMUNICATION THEORIES N68-32036

INDUCTIVE INFERENCE RESEARCH
RTB-155 N68-32078

INFORMATION LOSS IN VISUAL PREPERCEPTUAL SYSTEM N68-32309

INFRARED INSTRUMENTS
PROBLEMS ASSOCIATED WITH DETERMINATION OF CARBON DIOXIDE BY INFRARED ABSORPTION A68-81863

INFRARED RADIATION
OCCURRENCE OF CATARACTS IN WORKERS EXPOSED TO HEAT AND GLARE A68-81864

INHIBITORS
ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

INJURIES
PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION A68-38242

REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION A68-38243

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

DELETERIOUS EFFECTS OF ELECTRIC CURRENTS ON HUMAN SYSTEM A68-38581

INSECTS
COMPARISON OF INSECTS FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT

ANGELS
P-14 N68-31442

INSTRUMENT APPROACH
SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

INSTRUMENT LANDING SYSTEMS
HUMAN PILOT OPINION OF AIRCRAFT SAFETY PERFORMANCE ASSISTANCE PROVIDED BY AUTOMATIC SYSTEMS DURING INSTRUMENT TAKEOFF AND LANDING A68-38565

SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

INSULIN
EFFECT OF STARVATION ON PLASMA IMMUNOREACTIVE INSULIN AND NONSUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS A68-81848

EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

INTESTINES
ROLE OF SMALL INTESTINE IN CONTROLLING BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS A68-38246

ROLE OF CENTRAL NERVOUS SYSTEM IN CONTROLLING SECRETORY ACTIVITY OF SMALL INTESTINE AFTER PROLONGED EXPOSURE TO TRANSVERSE ACCELERATION A68-38247

EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY A68-81825

LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS A68-81906

PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE A68-81908

INTOXICATION
SIGNS AND SYMPTOMS OBSERVED IN HISTORIES OF WORKERS WITH ACUTE HYDROGEN DISULFIDE INTOXICATION A68-81946

INVERTEBRATES
BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767 N68-31737

IODINE 131
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

IONIZING RADIATION
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

INVESTIGATION OF RADIATION RESISTANCE OF SOME LIVING ORGANISMS AND POSSIBLE PRACTICAL APPLICATION IN FIELD OF RADIATION PROTECTION A68-81888

COMBINED EFFECTS OF VIBRATION AND IONIZING RADIATION ON FUNCTIONAL STATE OF SPINAL REFLEX ARC OF GUINEA PIGS N68-33287

IRON
INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

IRRITATION
IRRITATION CUMULATION DURING MOTION SICKNESS BY VOMITORY CENTER A68-38227

ISOLATION
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

ISOTOPIC LABELING
BIOLOGICAL CLEANABILITY OF SPACECRAFT SURFACES INVESTIGATED BY RADIOISOTOPE TRACER TECHNIQUES A68-38090

EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

K

KIDNEYS
ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

MORPHOLOGICAL CHANGES IN KIDNEYS OF DOGS SUBJECTED TO SINGLE CHEST-TO-BACK ACCELERATIONS A68-38240

KINESTHESIA
TACTILE-KINESTHETIC PERCEPTION OF LENGTH A68-81821

L

LABYRINTH
LABYRINTHINE FUNCTIONALITY IN ASTRONAUTS, CONSIDERING WEIGHTLESSNESS EFFECTS A68-37238

CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

LABYRINTHECTOMY
EFFERENT IMPULSATION OF VAGUS OF RABBITS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS A68-38225

LACTOSE
EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY A68-81825

LANDING SPEED
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE A68-38220

LASER OUTPUTS
CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

LASERS
HIGH AND LOW INTENSITIES OF LASER IRRADIATION ON SEROLOGIC PROPERTIES OF HUMAN AND RABBIT GAMMA GLOBULIN A68-81896

SAFETY MANUAL FOR PERSONNEL USING NEODYMIUM LASERS
APGC-TR-68-53 N68-32994

LEAD POISONING
LEAD CONCENTRATIONS IN CEREBROSPINAL FLUID IN PATIENTS EXPOSED TO LEAD POISONING FROM SOURCES INCLUDING TETRAETHYL LEAD A68-81878

LEARNING
EVALUATION OF THREE APPROACHES TO FIGURAL ORGANIZATION USING PAIRED-ASSOCIATES

DISCRIMINATION-LEARNING TASK VARYING IN COMPLEXITY A68-81819

PRIOR RECALL OF NEWLY LEARNED ITEMS AND RECENCY EFFECT IN FREE RECALL A68-81900

PAIRED-ASSOCIATE LEARNING RELATED TO PRONUNCIATION AND WORD FREQUENCY A68-81902

MANUAL GUIDANCE IN LEARNING PURSUIT TRACKING TASK A68-81903

BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

TWO-CHOICE DISCRIMINATION LEARNING AS FUNCTION OF VISUAL STIMULUS AND EVENT PROBABILITIES A68-81969

GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

FINITE INTEGER MODELS FOR LEARNING IN INDIVIDUAL HUMANS A68-82004

PROBLEMS AND METHODS OF LEARNING AND TRAINING AD-671060 N68-31583

LEARNING MACHINES
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS REPT.-9500-920089 N68-31363

LENGTH
TACTILE-KINESTHETIC PERCEPTION OF LENGTH A68-81821

RECEIVER OPERATING CHARACTERISTICS FOR DISCRIMINATION OF LINEAR EXTENT A68-81974

LESIONS
DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF NERVOUS SYSTEM A68-81937

LETHALITY
ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

LEUKOCYTES
BINDING OF SULFHYDRYL TO NORMAL AND IRRADIATED RABBIT LEUCOCYTE LYSOSOMES A68-81880

LIFE SCIENCES
ORIGINS OF LIFE AND EVOLUTION FROM MOLECULES TO CELLS, DISCUSSING BIOCHEMISTRY, ENERGETIC METABOLISMS AND COACERVATE SYSTEMS A68-39685

LIFE SUPPORT SYSTEMS
PHYSIOLOGICAL AND HYGIENIC REQUIREMENT OF LIFE SUPPORT SYSTEMS OF VOSTOK AND VOSKHOD SPACE SHIPS A68-38282

NORMALIZATION OF NOISE PRODUCED BY LIFE SUPPORT SYSTEMS IN SPACESHIP CABINS DURING PROLONGED FLIGHTS A68-38298

ARTIFICIAL WATER REGENERATION CYCLES FOR WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS A68-38308

PHYSIOLOGICAL-ECOLOGICAL INVESTIGATIONS OF CHLORELLA CULTURES AS LINK IN CLOSED ECOLOGICAL SYSTEM A68-38319

TILAPIA FISH AS POSSIBLE COMPONENT OF SPACECRAFT LIFE SUPPORT SYSTEMS A68-38324

LIFE SUPPORT SYSTEM DESIGN, CONSIDERING LONG MANNED SPACE MISSIONS AND REGENERATIVE SUBSYSTEMS FOR WATER AND OXYGEN RECOVERY A68-38507

COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS JPRS-46173 N68-32901

LIGHT (VISIBLE RADIATION)
SPATIAL SEPARATION OF TWO LIGHT-FLASHES AND THEIR PERCEIVED SEPARATION IN TIME A68-81823

ELECTRICAL SENSITIVITY OF EYE EXPOSED TO INTENSIVE PHOTIC STIMULUS A68-81984

CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

HUMAN REACTIONS AND ORGANIZING ACTIVITY IN TIME PERCEPTION FOLLOWING EXPOSURE TO LIGHT SIGNALS RTS-4099 N68-32582

LIGHT ADAPTATION
INTRAOCULAR EFFECTS ON FLASH BLINDNESS, MEASURING DISPLAY DETECTION TIMES FOLLOWING LIGHT ADAPTATION AREAS EXPOSURE IN VARIOUS RETINAL LOCATIONS A68-38091

LIPID METABOLISM
ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS A68-38518

BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

CARBOHYDRATE AND LIPID METABOLISM AND RELATION TO AUTONOMIC NERVOUS SYSTEM AND ENVIRONMENTAL STRESS A68-81832

ACUTE ANTILIPOLYTIC EFFECTS OF ETHYL ALCOHOL AND ACETATE IN HUMAN BEINGS A68-81932

LITERATURE
REVIEW OF LITERATURE ON STRUCTURE OF CELL MEMBRANES RTS-4481 N68-32664

LITHIUM FLUORIDES
TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETER CHARACTERISTICS BNWL-741 N68-32943

LIVER
REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION A68-38243

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM NASA-CR-96422 N68-33506

LONG TERM EFFECTS
ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE A68-38299

LOW TEMPERATURE ENVIRONMENTS
ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

BILIARY-FECAL EXCRETION OF THYROXINE DURING COLD EXPOSURE IN RAT A68-81989

THYROXINE DEIODINATION DURING COLD EXPOSURE IN RATS AFFECTED BY VARIOUS DRUGS A68-81990

LUNAR ENVIRONMENT
BIOLOGICAL QUARANTINE PROTOCOL FOR SAFE HANDLING AND STUDY OF LUNAR SAMPLE IN RECEIVING LABORATORY FOR INFECTIOUS OR TOXIC PROPERTIES
NASA-CR-92209 N68-31008

LUNAR GRAVITATION
STUDIES REVIEW OF PILOT PROBLEMS FOR ONE MAN FLYING UNITS IN SIMULATED LUNAR GRAVITY
NASA-TM-X-61164 N68-33437

LUNAR GRAVITATIONAL EFFECTS
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE A68-38083

LUNAR PROBES
TERRESTRIAL MICROORGANISMS DEPOSITED ON MOON BY UNMANNED LUNAR PROBES
NASA-CR-96121 N68-31501

LUNAR SOIL
BIOLOGICAL QUARANTINE PROTOCOL FOR SAFE HANDLING AND STUDY OF LUNAR SAMPLE IN RECEIVING LABORATORY FOR INFECTIOUS OR TOXIC PROPERTIES
NASA-CR-92209 N68-31008

LUNGS
SINGLE AND MULTIPLE ACCELERATION EFFECTS ON DOG LUNGS, DISCUSSING CHANGES IN VASCULAR AND PARENCHYMAL STRUCTURE A68-38238

LYMPH
LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE A68-38663

M

MACROPHAGES
EFFECT OF ETHYL ALCOHOL ON NUMBER AND VIABILITY OF ALVEOLAR MACROPHAGES IN MICE LUNGS A68-81930

MAGNESIUM
CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

MAMMALS
METABOLIC TRANSFORMATIONS OF NOREPINEPHRINE AND DRUGS AFFECTING THESE PROCESSES IN AUTONOMIC NERVOUS SYSTEM A68-81833

COMPONENTS AND ORIGINS OF MAMMALIAN ELECTRORETINOGRAM - REVIEW A68-81834

SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

HEMODYNAMIC DISTURBANCES OCCURRING DURING EXPERIMENTAL PULMONARY EMBOLISM IN CATS AND DOGS UNDER HYPOTHERMIC CONDITIONS AND USE OF GANGLION BLOCKERS A68-81882

REVIEW OF CURRENT WORK ROLE OF EVOKED POTENTIALS OF BRAIN IN VISUAL PERCEPTION A68-81894

HIGH AND LOW INTENSITIES OF LASER IRRADIATION ON SEROLOGIC PROPERTIES OF HUMAN AND RABBIT GAMMA GLOBULIN A68-81896

CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

MAN MACHINE SYSTEMS
RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

SOVIET BOOK ON SPACE AND TIME PERCEPTION IN OUTER SPACE, DISCUSSING COSMONAUT ROLE IN MAN VEHICLE SYSTEM A68-38335

METHOD OF EVALUATING LARGE NUMBERS OF SYSTEM ALTERNATIVES IN MAN MACHINE SYSTEM SITUATIONS A68-81947

ENERGY CONSIDERATIONS AS DETERMINANTS OF SYSTEM DESIGN IN MAN MACHINE SYSTEMS A68-81953

HUMAN FACTORS AND MANS ROLE IN MAN MACHINE SYSTEMS APPLIED TO ALLOCATIVE DECISION MAKING
AD-671128 N68-31149

SOVIET PROBLEMS IN EDUCATION AND TRAINING, GROUP DYNAMICS, OPERATOR PERFORMANCE, TEACHING MACHINES, AND PSYCHOMETRICS
ATD-68-34-108-2 N68-31447

PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687 N68-31891

MANAGEMENT PLANNING
FEASIBILITY STUDY TO ESTABLISH NATIONAL PROGRAM FOR TRAINING SKILLED AVIATION PERSONNEL
PB-178076 N68-31686

MANGANESE
MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS A68-38515

MANNED ORBITAL LABORATORIES
MANNED ORBITAL LABORATORY CENTRIFUGE RADIUS EFFECTS ON ASTRONAUT PERFORMANCE OF ENTRY TASKS FROM APOLLO ENTRY SIMULATION TESTS A68-38088

MANNED ORBITAL RESEARCH LABORATORIES
ORBITAL SPACE STATION EXPERIMENTS FOR STUDYING SPACE ENVIRONMENT AND EFFECTS ON TERRESTRIAL LIFE, NOTING CURRENT BIOMEDICAL INFORMATION A68-39684

MANNED SPACE FLIGHT
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

ARTIFICIAL WATER REGENERATION CYCLES FOR WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS A68-38308

CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

LIFE SUPPORT SYSTEM DESIGN, CONSIDERING LONG MANNED SPACE MISSIONS AND REGENERATIVE SUBSYSTEMS FOR WATER AND OXYGEN RECOVERY A68-38507

BIOLOGY IN SPACE - CONFERENCE, CAMBRIDGE, ENGLAND, JULY 1967 A68-39680

ISOLATION, CONFINEMENT AND SENSORY DEPRIVATION EFFECTS ON ASTRONAUT PERFORMANCE DURING EXTENDED MANNED SPACE FLIGHTS USING THEORETICAL APPROACH A68-39682

PSYCHOLOGICAL ASPECTS OF MANNED SPACE FLIGHT AND PROBLEMS IN RELIABILITY IMPROVEMENT, NOTING CENTRIFUGE ACCELERATION TRAINING AND CONDITIONING A68-39683

CHARACTERISTICS, CONSTRAINTS, AND IMPLICATIONS OF LONG DURATION SPACE MISSIONS BASED ON USE OF AVAILABLE HARDWARE AND MAINTENANCE/REPAIR ACTIONS IN SPACE
NASA-CR-73239 N68-32163

MANNED SPACECRAFT
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

MANUALS
SAFETY MANUAL FOR PERSONNEL USING NEODYMIUM LASERS
APGC-TR-68-53 N68-32994

MARROW
COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE N68-33288

MARS ATMOSPHERE
MARTIAN LIFE THEORIES, DISCUSSING NEAR GROUND ATMOSPHERE AND SURFACE LAYER OF LITHOSPHERE A68-37065

MARS SURFACE
MARTIAN LIFE THEORIES, DISCUSSING NEAR GROUND ATMOSPHERE AND SURFACE LAYER OF LITHOSPHERE A68-37065

MASKING
PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

MASS TRANSFER
HEAT AND MASS FLOW RATE THROUGH SEVERAL TYPES OF COMPOSITE CLOTHING UNDER SIMULATED CONDITIONS
TR-68-44-CM N68-32519

MATHEMATICAL MODELS
MATHEMATICAL SIMULATION METHODS TO STUDY CARDIOVASCULAR SYSTEM CONTROL FUNCTION UNDER EARTH BASED AND WEIGHTLESSNESS CONDITIONS A68-38219

MATHEMATICAL MODEL OF OTOCONIA TO STUDY VESTIBULAR ANALYSOR UNDER WEIGHTLESSNESS A68-38228

AVERAGING OF SPACE AND NUMBER STIMULI WITH SIMULTANEOUS PRESENTATION A68-81965

FINITE INTEGER MODELS FOR LEARNING IN INDIVIDUAL HUMANS A68-82004

GAS INERTANCE AND BAROMETRIC PRESSURE - MATHEMATICAL METHODS OF MEASUREMENT A68-82013

TONAWANDA 2 MODEL OF INERT GAS TRANSPORT FOR PREDICTING INCIDENCE OF DECOMPRESSION SICKNESS IN FLIGHT PROFILES
NASA-CR-92212 N68-31215

DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT
NASA-CR-66637 N68-31243

MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

MEASURING INSTRUMENTS
APPARATUS FOR MEASUREMENT OF PERCEIVED SHAPE A68-81824

USE OF MODIFIED BAROSPIRATOR TO DETERMINE AIRWAY RESISTANCE IN MAN A68-81862

NEW METHOD FOR TESTING ISOMETRIC MUSCLE STRENGTH OF HUMANS UNDER STANDARDIZED CONDITIONS A68-81893

MEDICAL EQUIPMENT
AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

MEMBRANE STRUCTURES
REVIEW OF LITERATURE ON STRUCTURE OF CELL MEMBRANES
RTS-4481 N68-32664

MEMORY
PRIOR RECALL OF NEWLY LEARNED ITEMS AND RECENCY EFFECT IN FREE RECALL A68-81900

UNIT SIZE AND INTERPOLATED-TASK DIFFICULTY AS DETERMINANTS OF SHORT-TERM RETENTION A68-81963

REPETITION EFFECT AND SHORT-TERM MEMORY OF VISUAL STIMULI A68-81968

SPATIAL VISUAL ENCODING STRATEGIES IN SEQUENTIAL SHORT-TERM MEMORY A68-81973

HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY
AMRL-TR-67-119 N68-31190

MENTAL HEALTH
INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

MENTAL PERFORMANCE
OPTIMAL ROOM TEMPERATURE FOR LIGHT PHYSICAL EXERCISE AND MENTAL PERFORMANCE A68-81892

MERCURY LAMPS
ULTRAVIOLET MERCURY RADIATION SOURCE DESIGNED FOR BIOLOGICAL SIMULATION EXPERIMENTS N68-32143

METABOLISM
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE A68-38083

HYPODYNAMIA EFFECT ON NITROGEN METABOLISM AND MEANING OF PROPORTIONED PHYSICAL LOADS FOR CONSERVATION OF NITROGEN EQUILIBRIUM A68-38302

QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

ORIGINS OF LIFE AND EVOLUTION FROM MOLECULES TO CELLS, DISCUSSING BIOCHEMISTRY, ENERGETIC METABOLISMS AND COACERVATE SYSTEMS A68-39685

METABOLIC TRANSFORMATIONS OF NOREPINEPHRINE AND DRUGS AFFECTING THESE PROCESSES IN AUTONOMIC NERVOUS SYSTEM A68-81833

EFFECT OF STARVATION ON METABOLIC BALANCE IN MONGREL AND DALMATIAN DOGS A68-81850

ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE A68-81884

RESPONSES OF HUMAN SUBJECTS TO ACUTE COLD EXPOSURE RELATED TO METABOLISM N68-32256

DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

METHODOLOGY
PROBLEMS AND METHODS OF LEARNING AND TRAINING
AD-671060 N68-31583

MEXICO
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

MICE
BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS A68-38255

HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA A68-38284

NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA A68-38289

ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE A68-81884

DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

EFFECT OF ETHYL ALCOHOL ON NUMBER AND VIABILITY OF ALVEOLAR MACROPHAGES IN MICE LUNGS A68-81930

EFFECTS OF VIBRATION AND GAMMA, IONIZING, OR X RAY RADIATION ON GUINEA PIGS AND MICE FTD-MT-24-142-67 N68-33285

COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE N68-33288

MICROBIOLOGY
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

BIOLOGICAL QUARANTINE PROTOCOL FOR SAFE HANDLING AND STUDY OF LUNAR SAMPLE IN RECEIVING LABORATORY FOR INFECTIOUS OR TOXIC PROPERTIES NASA-CR-92209 N68-31008

MICROORGANISMS
CHANGE OF SALT CONCENTRATION OF INFLOWING WASTE AFFECTING YIELD OF BIOLOGICAL SOLIDS AND ABILITY OF CONTINUOUS CULTURED MICROBES TO REMOVE SUBSTRATE A68-81924

TERRESTRIAL MICROORGANISMS DEPOSITED ON MOON BY UNMANNED LUNAR PROBES NASA-CR-96121 N68-31501

CRITICAL ANALYSIS OF PANSPERMIA THEORY IN VIEW OF RECENT SPACE FLIGHT DEVELOPMENTS N68-32139

WEIGHTLESSNESS SIMULATION AND STUDIES OF EFFECTS ON MICROORGANISMS, ALGAE, AND INSECTS N68-32142

THEORY AND EXPERIMENTAL PROGRAM IN SUPPORT OF CHEMICAL APPROACH TO LIFE ORIGIN AND EVOLUTION N68-32144

MICROSPORES
WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES A68-38248

MICROWAVES
EFFECT OF MICROWAVES AT X BAND ON GUINEA PIG SKIN IN TISSUE CULTURE - MICROWAVE APPARATUS FOR EXPOSING TISSUE AND EFFECT OF RADIATION ON SKIN RESPIRATION A68-81928

EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

MILITARY AVIATION
ALCOHOL AS CONTRIBUTORY FACTOR IN MILITARY AIRCRAFT ACCIDENT FATALITIES FROM POSTMORTEM TOXICOLOGICAL DATA A68-38092

MITOCHONDRIA
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

X RAY EFFECTS ON PHOSPHOLIPIDE AND PRESSURES NASA-CR-96228 N68-32427

MITOSIS
WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES A68-38248

MOBILITY
INTEGRATED SYSTEM OF MOBILITY NOTATION AND STANDARD TECHNIQUES FOR MEASUREMENT OF SPACESUIT MOBILITY A68-81957

MOLECULAR STRUCTURE
CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS NASA-CR-96453 N68-33555

MOLECULAR WEIGHT
OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

MONAURAL SIGNALS
MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION SMRL-509 N68-31925

MONKEYS
EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

HORIZONTAL ELECTROOCULOGRAPHIC POTENTIAL OPERANT CONDITIONING OF EYE MOVEMENT IN MONKEYS / MACACA NEMESTRINA/ A68-38659

DISCHARGE OF FRONTAL EYE FIELD NEURONS DURING SACCADIC AND FOLLOWING EYE MOVEMENTS IN UNANESTHETIZED MONKEYS A68-81914

CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN SAM-TR-68-33 N68-31396

RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS AD-670852 N68-31466

PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES NASA-CR-96199 N68-32424

MONOCULAR VISION
SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

PERSPECTIVE DETERMINANTS OF VISUAL SIZE-CONSTANCY IN BINOCULAR AND MONOCULAR CATS A68-81820

TWO-DIMENSIONAL FIELD EFFECTS AND STATIC SLANT PERCEPTION OF HUMANS VIEWING MONOCULARLY A68-81879

MOON
TERRESTRIAL MICROORGANISMS DEPOSITED ON MOON BY UNMANNED LUNAR PROBES NASA-CR-96121 N68-31501

MORPHOLOGY
MORPHOLOGICAL CHANGES IN KIDNEYS OF DOGS SUBJECTED

TO SINGLE CHEST-TO-BACK ACCELERATIONS
A68-38240

PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION
A68-38242

MOTION AFTEREFFECTS
STIMULUS SIZE AND VIEWING DISTANCE EFFECTS ON DURATION OF ILLUSORY MOTION IN SPIRAL AFTEREFFECT
FAA-AM-68-10 N68-32920

MOTION SICKNESS
INTERACTION OF SEMICIRCULAR CANALS AND OTOLITHIC APPARATUS FROM SENSORY AND NYSTAGMIC REACTIONS OF HUMANS SUBJECTED TO POSITIVE AND NEGATIVE ACCELERATION A68-38226

IRRITATION CUMULATION DURING MOTION SICKNESS BY VOMITORY CENTER A68-38227

PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122 N68-31459

PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES
NASA-CR-96199 N68-32424

MOTION STABILITY
ASTRONAUT MOTION EFFECT ON PRECISE CONTROL OF SPACECRAFT ATTITUDE A68-37790

MOTIVATION
EXPERIMENTAL PROGRAM TO STUDY ORDERED SEQUENCES OF ACTION WITH LIKE MOTIVE ACT SETS, SAME NUMBER OF ELEMENTS AND DIFFERING IN GROUP DIMENSIONALITY
A68-38271

MOUNTAIN INHABITANTS
HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE
A68-81852

MOUNTAINS
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

MOUTH
DEODORIZING AND REFRESHING EFFECTS OF TOOTHPASTES AND ORAL PREPARATIONS INVESTIGATED FOR SELECTION FOR ASTRONAUT HYGIENE A68-38313

MUSCLES
MICROMORPHOLOGICAL CHANGES IN MUSCULAR FIBERS DURING INTENSIVE PHYSICAL WORK IN ALBINO RATS
A68-81889

EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

MUSCULAR FUNCTION
EXPERIMENTS AND ASSOCIATED HYPOTHESES CONCERNING METHODS OF ORGANIZING HUMAN MOTOR ACTIVITY
A68-38270

MUSCULAR STRENGTH
NEW METHOD FOR TESTING ISOMETRIC MUSCLE STRENGTH OF HUMANS UNDER STANDARDIZED CONDITIONS
A68-81893

EFFECT OF ISOMETRIC-ISOTONIC TRAINING ON SHOT PUT DISTANCE AND MAXIMUM ISOMETRIC STRENGTH IN ATHLETES A68-81925

MUSCULOSKELETAL SYSTEM
SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

EXPERIMENTS AND ASSOCIATED HYPOTHESES CONCERNING METHODS OF ORGANIZING HUMAN MOTOR ACTIVITY
A68-38270

MUSCULOSKELETAL CHANGES IN CHRONIC INTOXICATION WITH AGENTS OF BENZOL SERIES A68-81873

CORRELATION BETWEEN JENDRASSIK AND VALSALVA MANEUVERS - MUSCULAR REACTIONS DURING RESPIRATION A68-81899

MUTATIONS
MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER A68-81813

MYOCARDIUM
CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

N

NARCOTICS
COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

NASA PROGRAMS
N ASA PROGRAM OUTLINE ON RESEARCH AND DEVELOPMENT RELATED TO BIOLOGICAL SPACE EXPLORATION
N68-32132

NAUSEA
IRRITATION CUMULATION DURING MOTION SICKNESS BY VOMITORY CENTER A68-38227

NERVOUS SYSTEM
TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS A68-38218

HUMAN VEGETATIVE REACTIONS UNDER ANGULAR ACCELERATIONS NOTING NO DEPENDENCE ON MAGNITUDE
A68-38224

ADULT NERVOUS SYSTEM INCORPORATES DESCRIPTION OF TIME INTERVAL SETS FOR AUTOMATIC CONTROL OF RATE OF MOTIONS, DISCUSSING ACCURACY OF ORGANIZED SEQUENCE OF MOTIONS A68-38272

COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

ROLE OF VARIOUS PARTS OF NERVOUS SYSTEM AND ENDOCRINE GLANDS IN DEVELOPMENT OF SPECIFIC AND NON-SPECIFIC RESISTANCE OF RATS
A68-81943

PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

MECHANISMS OF ATTENTION TO BOTH AUDITORY AND VISUAL STIMULI IN HUMANS A68-81985

NEUROLOGY
NEUROLOGICAL ASPECTS OF DIFFERENTIAL DIAGNOSIS OF VERTIGO A68-81812

CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

NEURONS
REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

DISCHARGE OF FRONTAL EYE FIELD NEURONS DURING SACCADIC AND FOLLOWING EYE MOVEMENTS IN UNANESTHETIZED MONKEYS A68-81914

EVALUATING MEMBRANE POTENTIAL AND SPIKE PATTERNS BY EXPERIMENTER-CONTROLLED COMPUTER DISPLAY
A68-81923

ELECTROMYOGRAMS IN RELATION TO SYNCHRONIZATION

OF MOTOR NEURONS IN HEALTHY AND DISEASED PERSONS A68-81940

NEUROPHYSIOLOGY
ACTIVITY OF INDIVIDUAL NEURONS OF RETICULAR FORMATION OF MEDULLA OBLONGATA IN CATS DURING VERTICAL ACCELERATION A68-38231

NEUTRON SOURCES
FISSION NEUTRON SOURCES AND DOSIMETRY IN TISSUE EQUIVALENT PHANTOM - CALIFORNIUM 252
BNL-12452 N68-31645

NITROBENZENES
AMMONIA IN GASTRIC JUICE OF PATIENTS WITH CHRONIC INTOXICATION BY NITRODERIVATIVES OF BENZENE AND ITS HOMOLOGUES A68-81987

NITROGEN
HYPODYNAMIA EFFECT ON NITROGEN METABOLISM AND MEANING OF PROPORTIONED PHYSICAL LOADS FOR CONSERVATION OF NITROGEN EQUILIBRIUM A68-38302

NITROGEN COMPOUNDS
HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS N68-32141

HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS N68-32147

NITROGEN FLUORIDES
SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

NITROUS OXIDES
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY A68-38771

NOISE (SOUND)
INCREASING MILITARY PROBLEM OF NOISE INCLUDING METHODS OF HEARING MEASUREMENT AND EAR PROTECTION A68-81816

FREQUENCY-FOLLOWING MICROPHONIC-LIKE NEURAL RESPONSES EVOKED BY SOUND IN CATS A68-81939

PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

NOISE INJURIES
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

NOISE TRAUMA AND RESULTING HEARING DEFICIENCIES CAUSED BY FIRE ARMS IN ARMY POPULATION A68-81887

NOISE INTENSITY
HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY
AMRL-TR-67-119 N68-31190

NOISE REDUCTION
NORMALIZATION OF NOISE PRODUCED BY LIFE SUPPORT SYSTEMS IN SPACESHIP CABINS DURING PROLONGED FLIGHTS A68-38298

NOISE THRESHOLD
ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE A68-38299

MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION
SMRL-509 N68-31925

NOISE TOLERANCE
AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193 N68-33005

NORADRENALINE
ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

NOREPINEPHRINE
METABOLIC TRANSFORMATIONS OF NOREPINEPHRINE AND DRUGS AFFECTING THESE PROCESSES IN AUTONOMIC NERVOUS SYSTEM A68-81833

NOVOCAIN
NOVOCAIN POTENTIATION OF CHLORPROMAZINE TRANQUILIZING PROPERTIES IN ANIMALS A68-81866

NUTRIENTS
TILAPIA FISH AS POSSIBLE COMPONENT OF SPACECRAFT LIFE SUPPORT SYSTEMS A68-38324

NUTRITION
HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

HETEROTROPHIC ORGANISMS AS HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS A68-38307

GROWTH OF TILAPIA FISH KEPT ON DRY CHLORELLA DIET COMBINED WITH OTHER FODDER A68-38326

O

OBESITY
HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION A68-81844

BODY COMPOSITION CHANGES IN OBESE HUMANS DURING INTERMITTENT STARVATION A68-81846

BROMSULPHALEN RETENTION TEST DURING PROLONGED FASTS RELATED TO CHANGES IN PLASMA VOLUME OF OBESE HUMANS A68-81847

EFFECT OF STARVATION ON PLASMA IMMUNOREACTIVE INSULIN AND NONSUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS A68-81848

OCULOGRAVIC ILLUSIONS
DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION A68-37768

OPTICAL ILLUSIONS ASSOCIATED WITH WEIGHTLESSNESS ATTRIBUTED TO INVERSE AFFERENTATION INFLUENCE WHICH SIGNALS CHANGES IN OCULOMOTOR APPARATUS A68-38280

STIMULUS SIZE AND VIEWING DISTANCE EFFECTS ON DURATION OF ILLUSORY MOTION IN SPIRAL AFTEREFFECT
FAA-AM-68-10 N68-32920

OCULOMOTOR NERVES
OPTICAL ILLUSIONS ASSOCIATED WITH WEIGHTLESSNESS ATTRIBUTED TO INVERSE AFFERENTATION INFLUENCE WHICH SIGNALS CHANGES IN OCULOMOTOR APPARATUS A68-38280

OFF-ON CONTROL
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43 N68-31734

ONBOARD EQUIPMENT
FEASIBILITY AND DESIGN CONFIGURATION OF ORBITAL ONBOARD CENTRIFUGE FOR HUMAN PHYSIOLOGICAL EXPERIMENTS DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66649 **N68-33296**

OPERATOR PERFORMANCE
HUMAN FREQUENCY RESPONSE IN PURSUIT TRACKING AS FUNCTION OF VISUAL FEEDBACK DELAY
A68-81956

SOVIET PROBLEMS IN EDUCATION AND TRAINING, GROUP DYNAMICS, OPERATOR PERFORMANCE, TEACHING MACHINES, AND PSYCHOMETRICS
ATD-68-34-108-2 N68-31447

OPERATORS (PERSONNEL)
MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

OPHTHALMODYNAMOMETRY
PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS
N68-32154

OPHTHALMOLOGY
CORTICAL-RETINAL DISTURBANCES IN OPTICAL ANALYSOR DURING ACCELERATION A68-38223

OPTICAL ILLUSION
OPTICAL ILLUSIONS ASSOCIATED WITH WEIGHTLESSNESS ATTRIBUTED TO INVERSE AFFERENTATION INFLUENCE WHICH SIGNALS CHANGES IN OCULOMOTOR APPARATUS
A68-38280

OPTICAL ILLUSIONS OF SUBJECTS UNDER WEIGHTLESSNESS COMBINED WITH ANGULAR AND CORIOLIS ACCELERATIONS
A68-38281

OPTIMAL CONTROL
MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

ORBITAL SPACE STATIONS
ORBITAL SPACE STATION EXPERIMENTS FOR STUDYING SPACE ENVIRONMENT AND EFFECTS ON TERRESTRIAL LIFE, NOTING CURRENT BIOMEDICAL INFORMATION
A68-39684

ORBITAL VELOCITY
VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS DURING ACCELERATED OBSERVER MOVEMENT AND CONSTANT VELOCITY A68-39681

ORGANIC COMPOUNDS
HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS N68-32141

ORGANISMS
SURVIVAL OF LIVING ORGANISMS IN SPACE VEHICLES STUDIED FROM RESULTS OF BIOLOGICAL EXPERIMENTS
A68-37237

OSMOSIS
ERYTHROCYTE OSMOTIC RESISTIVITY CHANGES DURING HIGH MOUNTAIN ACCLIMATIZATION OF MOUNTAIN CLIMBERS AND ATHLETES A68-38294

OTOLITH ORGANS
LABYRINTHINE FUNCTIONALITY IN ASTRONAUTS, CONSIDERING WEIGHTLESSNESS EFFECTS
A68-37238

CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING
A68-38229

CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS
NASA-CR-96453 N68-33555

OXYGEN
MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

OXYGEN BREATHING
HIGH PRESSURE OXYGEN BREATHING TECHNIQUES AND TRAINING, PHYSIOLOGY AND HIGH ALTITUDE EMERGENCY DESCENT SURVIVAL A68-38288

CONTINUOUS METHODS FOR CONTROLLING OXYGEN SUPPLY OF HUMAN BODY N68-32148

OXYGEN CONSUMPTION
ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES
A68-38232

WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR
A68-38283

SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE USING ANALYTICAL CIRCUITS AND ANALOG COMPUTER A68-81860

ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS
A68-81874

LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS
A68-81906

OXYGEN METABOLISM
CONTINUOUS METHODS FOR CONTROLLING OXYGEN SUPPLY OF HUMAN BODY N68-32148

OXYGEN PRODUCTION
CULTIVATING PLANTS FOR CLOSED ECOLOGICAL SYSTEMS DURING LONG MANNED SPACE FLIGHTS
JPRS-46306 N68-33269

OXYGEN SUPPLY EQUIPMENT
LIFE SUPPORT SYSTEM DESIGN, CONSIDERING LONG MANNED SPACE MISSIONS AND REGENERATIVE SUBSYSTEMS FOR WATER AND OXYGEN RECOVERY A68-38507

OXYGEN TENSION
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES
A68-38291

OZONE
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

P

PATHOLOGICAL EFFECTS
ACCELERATION EFFECTS ON PHYSIOPATHOLOGY, HEART AND CIRCULATION OF ASTRONAUTS DURING LAUNCHING AND LANDING A68-37243

PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION
A68-38242

HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

PATHOLOGY
REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION
A68-38243

BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

HISTOPATHOLOGIC BASIS OF DISORDERS OF PERIPHERAL VESTIBULAR SYSTEM PRODUCING VERTIGO
A68-81811

PATTERN RECOGNITION
VISUAL PERCEPTION AND IMAGE IDENTIFICATION BY READING MACHINES
FTD-MT-66-158 N68-31496

PENTOBARBITAL
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY A68-38771

PEPSIN
VALIDITY OF UROPEPSIN EXCRETION IN URINE IN MAN AS AN OBJECTIVE TEST INDEX OF FATIGUE IN AEROSPACE MEDICINE A68-82006

PEPTIDES
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

PERCEPTION
EFFECTS OF L-HYOSCINE HYDROBROMIDE ON POST ROTARY SENSATION AND NYSTAGMUS IN HUMANS A68-81926

EFFECT OF REPETITION ON MEASUREMENTS OF POST-ROTATIONAL TURNING SENSATION AND NYSTAGMUS IN HUMANS AFTER DECELERATION FROM CONSTANT ANGULAR VELOCITIES A68-81927

PERFORMANCE
DECREMENT IN PERFORMANCE IN VIGILANCE TASKS RELATED TO HABITUATION OF NEURAL RESPONSES TO BACKGROUND EVENTS A68-82002

PERSONNEL
SAFETY MANUAL FOR PERSONNEL USING NEODYMIUM LASERS APGC-TR-68-53 N68-32994

PERSPIRATION
PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS A68-81856

PHENOLS
EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR A68-81877

PHOSPHORUS COMPOUNDS
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE A68-81891

PHOSPHORUS METABOLISM
EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS A68-81827

PHOSPHORYLATION
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

PHOTOCHEMICAL REACTIONS
PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF PORPHIN SERIES RTS-4318 N68-32429

PHOTOGRAPHIC EQUIPMENT
ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS BNWL-SA-1569 N68-33498

PHOTOGRAPHIC MEASUREMENT
SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY N68-32573

PHOTOGRAPHY
HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS A68-81952

PHOTOLUMINESCENCE
ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS BNWL-SA-1569 N68-33498

PHOTOSYNTHESIS
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH A68-38321

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS A68-38515

PHYSICAL EXERCISE
NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA A68-38289

EFFECT OF EXERCISE ON PREVENTION AND THERAPY OF CORONARY HEART DISEASE A68-81828

EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE USING ANALYTICAL CIRCUITS AND ANALOG COMPUTER A68-81860

MICROMORPHOLOGICAL CHANGES IN MUSCULAR FIBERS DURING INTENSIVE PHYSICAL WORK IN ALBINO RATS A68-81889

OPTIMAL ROOM TEMPERATURE FOR LIGHT PHYSICAL EXERCISE AND MENTAL PERFORMANCE A68-81892

EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

EFFECT OF ISOMETRIC-ISOTONIC TRAINING ON SHOT PUT DISTANCE AND MAXIMUM ISOMETRIC STRENGTH IN ATHLETES A68-81925

PHYSICAL WORK
SOVIET COLLECTION OF PAPERS ON SPACE BIOLOGY, VOLUME 7, COVERING WORK ACTIVITY AND BIOTECHNOLOGY A68-38267

PHYSIOCHEMISTRY
GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS N68-32140

PHYSIOLOGICAL ACCELERATION
ACCELERATION EFFECTS ON PHYSIOPATHOLOGY, HEART AND CIRCULATION OF ASTRONAUTS DURING LAUNCHING AND LANDING A68-37243

DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION A68-37768

ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS NASA-CR-96296 N68-32733

TRIAXIAL MULTIPLE CHANNEL ACCELEROMETER MODULE FOR VESTIBULAR STIMULATION MEASUREMENTS IN AIRCRAFT

NASA-CR-96298 N68-32734

PHYSIOLOGICAL EFFECTS
EXERCISE AT ALTITUDE - CONFERENCE, MILAN, SEPTEMBER- OCTOBER 1966 A68-37513

SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

SOVIET COLLECTION OF ARTICLES ON SPACE BIOLOGY, VOLUME 6, COVERING GRAVITATIONAL AND PHYSIOLOGICAL EFFECTS, HUMAN RESPONSE, ETC A68-38213

CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE A68-38220

DOGS STOMACH AND DUODENUM PERIODIC MOTOR ACTIVITY CHANGES AFTER EXPOSURE TO ACCELERATION FORCES A68-38245

IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

PHYSIOLOGICAL EFFECTS IN RATS OF SUBSTITUTING HELIUM FOR NITROGEN UNDER HYPOXIA AND HIGH CARBON DIOXIDE CONCENTRATIONS A68-38286

HELIUM-OXYGEN MIXTURE BREATHING EFFECTS ON VOCAL FREQUENCY AND AMPLITUDE, NOTING SUBSTANTIAL QUALITY DETERIORATION OF COMMUNICATIONS A68-38287

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION A68-38293

QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

ELECTRIC STIMULI OF DOGS TO STUDY FUNCTIONAL STRUCTURE OF TEMPORARY CONNECTION IN AVOIDANCE REACTIONS
NS-59 N68-31791

RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34 N68-32088

METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE
NASA-CR-96450 N68-33333

PHYSIOLOGICAL FACTORS
ASTRONAUT PROTECTION AGAINST EXTREME TEMPERATURE CHANGES NOTING PHYSIOLOGICAL AND PHYSICAL MECHANISMS FOR ADAPTATION TO COLD AND HEAT A68-37240

PHYSIOLOGICAL RESPONSES
ACCELERATION EFFECTS ON PHYSIOPATHOLOGY, HEART AND CIRCULATION OF ASTRONAUTS DURING LAUNCHING AND LANDING A68-37243

VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

HUMAN VEGETATIVE REACTIONS UNDER ANGULAR ACCELERATIONS NOTING NO DEPENDENCE ON MAGNITUDE A68-38224

REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

SINGLE AND MULTIPLE ACCELERATION EFFECTS ON DOG LUNGS, DISCUSSING CHANGES IN VASCULAR AND PARENCHYMAL STRUCTURE A68-38238

WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR A68-38283

PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

TRANSATLANTIC FLIGHT EFFECTS ON CIRCADIAN RHYTHM A68-38900

AUTONOMIC NERVOUS SYSTEM AND PHYSIOLOGIC THERMOREGULATION OF BODY TEMPERATURE A68-81831

PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM A68-81854

SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLORDETHYLENE IN ADULT AND NEWBORN RATS A68-81890

PSYCHOLOGIC AND PHYSIOLOGIC RESPONSES OF PSYCHIATRIC PATIENTS AND NORMALS DURING FIFTY HOURS OF WAKEFULNESS A68-81997

VALIDITY OF UROPEPSIN EXCRETION IN URINE IN MAN AS AN OBJECTIVE TEST INDEX OF FATIGUE IN AEROSPACE MEDICINE A68-82006

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA
AR-2 N68-30963

TESTOSTERONE PRODUCTION AND HORMONE METABOLISM OF MEN IN HIGH ALTITUDE ENVIRONMENTS
AR-2 N68-31059

ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN
RAE-LIB-TRANS-1298 N68-31916

PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS N68-32154

FEASIBILITY AND DESIGN CONFIGURATION OF ORBITAL ONBOARD CENTRIFUGE FOR HUMAN PHYSIOLOGICAL EXPERIMENTS DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66649 N68-33296

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

PHYSIOLOGICAL TESTS
ELECTROENCEPHALOGRAM CLASSIFICATION REGARDING PILOT SELECTION A68-38264

BROMSULPHALEN RETENTION TEST DURING PROLONGED FASTS RELATED TO CHANGES IN PLASMA VOLUME OF OBESE HUMANS A68-81847

EFFECTS OF DIET VARIATION ON SECRETORY FUNCTION OF

SMALL INTESTINE
RTS-4530 N68-32764

METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE
NASA-CR-96450 N68-33333

PHYSIOLOGY
PHYSIOLOGICAL MECHANISMS FOR SELF-REGULATION OF HIGHER NERVOUS ACTIVITY IN ANIMALS AND MAN
FTD-HT-23-808-67 N68-32030

PILOT ERROR
DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION A68-37768

PILOT PERFORMANCE
HUMAN ERRORS ARISING IN MANNED AIRCRAFT SYSTEMS, INVESTIGATING EFFECTS OF FATIGUE, MICROSLEEP, PSYCHOLOGICAL CAUSES, ETC A68-38510

HUMAN PILOT OPINION OF AIRCRAFT SAFETY PERFORMANCE ASSISTANCE PROVIDED BY AUTOMATIC SYSTEMS DURING INSTRUMENT TAKEOFF AND LANDING A68-38565

CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

PILOT RESISTANCE TO RADIAL ACCELERATION - STUDY CARRIED OUT BY BULGARIAN AIR FORCE A68-81898

IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION A68-81951

PILOT SELECTION
ELECTROENCEPHALOGRAM CLASSIFICATION REGARDING PILOT SELECTION A68-38264

PILOT TRAINING
HIGH PRESSURE OXYGEN BREATHING TECHNIQUES AND TRAINING, PHYSIOLOGY AND HIGH ALTITUDE EMERGENCY DESCENT SURVIVAL A68-38288

IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION A68-81951

BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS A68-82008

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

FEASIBILITY STUDY TO ESTABLISH NATIONAL PROGRAM FOR TRAINING SKILLED AVIATION PERSONNEL
PB-178076 N68-31686

PILOTS (PERSONNEL)
STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS A68-82014

ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

STUDIES REVIEW OF PILOT PROBLEMS FOR ONE MAN FLYING UNITS IN SIMULATED LUNAR GRAVITY
NASA-TM-X-61164 N68-33437

PLANTS (BOTANY)
CONTINUOUSLY VARYING GRAVITATIONAL FIELD FOR STUDYING WEIGHTLESSNESS EFFECTS ON GROWTH AND DEVELOPMENT OF CREEPER PLANT A68-37242

CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

INVESTIGATION OF RADIATION RESISTANCE OF SOME LIVING ORGANISMS AND POSSIBLE PRACTICAL APPLICATION IN FIELD OF RADIATION PROTECTION A68-81888

CULTIVATING PLANTS FOR CLOSED ECOLOGICAL SYSTEMS DURING LONG MANNED SPACE FLIGHTS
JPRS-46306 N68-33269

PLAYBACKS
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751 N68-32100

POLARIZATION (WAVES)
SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY N68-32573

POLYMERIZATION
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

POLYMERS
REVIEW OF SOVIET PAPERS CONCERNING AIR MEDIA STATE IN AIRTIGHT MANNED VOLUMES, DISCUSSING TOXICOLOGY OF POLYMER MATERIALS A68-39200

POSITION (LOCATION)
AVERAGING OF SPACE AND NUMBER STIMULI WITH SIMULTANEOUS PRESENTATION A68-81965

POWER EFFICIENCY
COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS
JPRS-46173 N68-32901

PREDICTIONS
RELEVANT PHASE CONDITIONS FOR PREDICTING OCCURRENCE OF DECOMPRESSION SICKNESS IN GOATS A68-81861

PRESERVATIVES
CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

PRESSURE EFFECTS
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE A68-38663

PRESSURE MEASUREMENTS
GASTRIC PRESSURES RECORDED BY TELEMETRIC METHODS IN FASTING HUMANS A68-81826

PRESSURE REDUCTION
PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM A68-81854

PRESSURE SUITS
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE A68-38083

PREVENTION
EFFECT OF EXERCISE ON PREVENTION AND THERAPY OF CORONARY HEART DISEASE A68-81828

PRIMATES
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING

RESPONSES
ARL-TR-68-4 N68-32814

PROBLEM SOLVING
ORIENTING REFLEX AND ATTENTION IN COGNITIVE DEVELOPMENT AS RELATED TO PROBLEM SOLVING BEHAVIOR A68-82003

INDUCTIVE INFERENCE RESEARCH
RTB-155 N68-32078

PSYCHOLOGICAL FACTORS IN THINKING DIRECTION DURING PROBLEM SOLVING
RTS-4098 N68-32506

PROPORTIONAL COUNTERS
THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE N68-32135

PROPRIOCEPTION
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

PROSTHETIC DEVICES
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43 N68-31734

PROTECTION
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC *ACID IN ACUTE INTOXICATION WITH SOLUBLE* BERYLLIUM COMPOUNDS IN RATS AND MICE A68-81891

PROTECTIVE CLOTHING
PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT COMPATIBLE WITH SERVICEABILITY REQUIREMENTS A68-38482

HEAT AND MASS FLOW RATE THROUGH SEVERAL TYPES OF COMPOSITE CLOTHING UNDER SIMULATED CONDITIONS
TR-68-44-CM N68-32519

PROTEIN METABOLISM
EFFECT OF 14,000 FT ALTITUDE ON PROTEIN METABOLISM IN HUMANS A68-81845

PROTEINOIDS
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

PROTEINS
PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE A68-81908

PROTON DAMAGE
CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

PROTON IRRADIATION
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

PSYCHIATRY
PSYCHIATRIC EXPERIENCE OF PHYSICIAN DURING EIGHT-WEEK POLARIS SUBMARINE PATROLS A68-81919

PSYCHOLOGICAL EFFECTS
CIRCADIAN RHYTHM EXISTENCE FOR PSYCHOLOGICAL PHENOMENA A68-38901

BIOLOGICAL RHYTHMS IN MAN, ANIMALS AND PLANTS A68-38902

PSYCHOLOGIC AND PHYSIOLOGIC RESPONSES OF PSYCHIATRIC PATIENTS AND NORMALS DURING FIFTY HOURS OF WAKEFULNESS A68-81997

STATISTICAL STUDY OF SKULL TRAUMATISMS AND MEDICAL STANDARDS OF FLIGHT FITNESS A68-82007

PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687 N68-31891

PSYCHOLOGICAL FACTORS
PSYCHOLOGICAL ASPECTS OF MANNED SPACE FLIGHT AND PROBLEMS IN RELIABILITY IMPROVEMENT, NOTING CENTRIFUGE ACCELERATION TRAINING AND CONDITIONING A68-39683

REPRODUCTION AND RATIO-PRODUCTION OF BRIEF DURATION UNDER CONDITIONS OF SENSORY ISOLATION A68-81818

PSYCHOLOGICAL FACTORS IN THINKING DIRECTION DURING PROBLEM SOLVING
RTS-4098 N68-32506

PSYCHOLOGICAL SETS
PSYCHOLOGICAL FACTORS IN THINKING DIRECTION DURING PROBLEM SOLVING
RTS-4098 N68-32506

PSYCHOLOGICAL TESTS
DIURNAL VARIATIONS OF MUSCLE ACTION POTENTIALS AND WORD ASSOCIATIONS RELATED TO PSYCHOLOGICAL ORIENTATION A68-81996

PSYCHOLOGY
SUMMARY INFORMATION ON SOVIET RESEARCH IN TELEPATHY AND APPLICATION OF COMMUNICATION THEORY TECHNIQUES TO TELEPATHIC COMMUNICATION N68-32034

METHODS AND RESULTS OF EARLY AND RECENT SOVIET THEORETICAL AND EXPERIMENTAL RESEARCH IN TELEPATHY N68-32035

PSYCHOMOTOR PERFORMANCE
EXPERIMENTS AND ASSOCIATED HYPOTHESES CONCERNING METHODS OF ORGANIZING HUMAN MOTOR ACTIVITY A68-38270

HUMAN METHOD OF ORGANIZING ACTIVITY, DISCUSSING DECISION MAKING FOR NEXT ACTION WHILE ESTIMATING PRECEDING ACTIONS WITH SIMULTANEOUS CONSIDERATION OF INSTANTANEOUS SIGNAL A68-38273

HUMAN ORGANIZATION OF SYSTEM OF ACTIONS WITH RANDOM ALTERNATION OF SIGNALS AND SEARCH AND CHOICE OF ACTIONS A68-38274

EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS A68-38276

COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

ELECTROMYOGRAPHIC AND ELECTROENCEPHALOGRAPHIC RESPONSES OF HUMANS PERFORMING VARIOUS MOTOR TASKS A68-81934

MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

COORDINATION OF MOVEMENTS OF EYES AND HAND IN VARIOUS MOTOR TASKS A68-81978

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

PSYCHOPHYSICS
THRESHOLD VALUES AND PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION A68-81837

PSYCHOPHYSIOLOGY
MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

PULMONARY CIRCULATION
HEMODYNAMIC DISTURBANCES OCCURRING DURING EXPERIMENTAL PULMONARY EMBOLISM IN CATS AND DOGS UNDER HYPOTHERMIC CONDITIONS AND USE OF GANGLION BLOCKERS A68-81882

PULMONARY FUNCTIONS
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

USE OF MODIFIED BAROSPIRATOR TO DETERMINE AIRWAY RESISTANCE IN MAN A68-81862

DESIGN OF AIR PASSAGES RELATED TO GAS MOVEMENT IN ALVEOLAR VENTILATION A68-81915

EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

PURIFICATION
LITERATURE SURVEY OF AIR REGENERATION IN SEALED ENVIRONMENTS
TDCK-50963 N68-32451

PURSUIT TRACKING
MANUAL GUIDANCE IN LEARNING PURSUIT TRACKING TASK A68-81903

HUMAN FREQUENCY RESPONSE IN PURSUIT TRACKING AS FUNCTION OF VISUAL FEEDBACK DELAY A68-81956

MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

Q

Q SWITCHED LASERS
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

QUANTITATIVE ANALYSIS
PROBLEMS ASSOCIATED WITH DETERMINATION OF CARBON DIOXIDE BY INFRARED ABSORPTION A68-81863

METHOD OF QUANTITATIVE DETERMINATION OF EPINEPHRINE AND NOREPINEPHRINE IN URINE A68-81865

R

RABBITS
CATS AND RABBITS OXYGEN CONTENT IN BRAIN TISSUES MEASURED UNDER G FORCES NOTING DEPENDENCE ON MAGNITUDE AND DIRECTION A68-38234

HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION A68-38290

HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

NOVOCAIN POTENTIATION OF CHLORPROMAZINE TRANQUILIZING PROPERTIES IN ANIMALS A68-81866

MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

BINDING OF SULFHYDRYL TO NORMAL AND IRRADIATED RABBIT LEUCOCYTE LYSOSOMES A68-81880

EXCRETION OF BILE ACIDS IN RABBITS DURING FUNCTIONAL STRESS OF NERVOUS SYSTEM OF INTENSE ACTIVITY A68-81883

RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION A68-81897

SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS A68-81935

CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

RACE FACTORS
COLD ACCLIMATION IN PUERTO RICANS A68-81859

RADAR ECHOES
COMPARISON OF INSECTS FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT ANGELS
P-14 N68-31442

RADIATION BELTS
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

RADIATION DOSAGE
INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES A68-81830

ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE N68-32135

RADIATION EFFECTS
GAMMA RADIATION EXPOSURE AND WEIGHTLESSNESS EFFECTS COMPARED FOR BIOLOGICAL MATERIAL DURING BIOSATELLE 2 FLIGHT AND IN EARTH CONTROL CAPSULE, NOTING RADIATION SOURCES A68-37453

CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

EFFECT OF MICROWAVES AT X BAND ON GUINEA PIG SKIN IN TISSUE CULTURE - MICROWAVE APPARATUS FOR EXPOSING TISSUE AND EFFECT OF RADIATION ON SKIN RESPIRATION A68-81928

EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS SAM-TR-67-112 N68-31408

HIT THEORY AND MICRODOSIMETRY APPLIED TO RELATIVE BIOLOGICAL EFFECTIVENESS PROBLEM BNWL-SA-1753 N68-31666

BIOLOGICAL EFFECTS OF X RAY IRRADIATION ON MICROCOCCUS DENITRIFICANS N68-32136

LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS ATD-68-105-108-9 N68-33037

EFFECTS OF VIBRATION AND GAMMA, IONIZING, OR X RAY RADIATION ON GUINEA PIGS AND MICE FTD-MT-24-142-67 N68-33285

ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS BNWL-SA-1569 N68-33498

RADIATION HAZARDS

RADIOLOGICAL CONTAMINATION DETECTED DURING CIVILIAN AIRCRAFT FLIGHTS A68-37241

RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE N68-32133

RADIATION INJURIES

ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS A68-38255

CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION A68-81838

BINDING OF SULFHYDRYL TO NORMAL AND IRRADIATED RABBIT LEUCOCYTE LYSOSOMES A68-81880

RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS AD-670852 N68-31466

RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS SAM-TR-68-34 N68-32088

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE N68-32133

BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS N68-32134

RADIATION PROTECTION

SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION A68-81838

INVESTIGATION OF RADIATION RESISTANCE OF SOME LIVING ORGANISMS AND POSSIBLE PRACTICAL APPLICATION IN FIELD OF RADIATION PROTECTION A68-81888

ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE A68-81912

RADIATION SHIELDING

ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS A68-38255

SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION A68-38260

RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

RADIATION SICKNESS

IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS A68-38254

RADIATION SOURCES

ULTRAVIOLET MERCURY RADIATION SOURCE DESIGNED FOR BIOLOGICAL SIMULATION EXPERIMENTS N68-32143

RADIATION TOLERANCE

RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION A68-38260

JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

INVESTIGATION OF RADIATION RESISTANCE OF SOME LIVING ORGANISMS AND POSSIBLE PRACTICAL APPLICATION IN FIELD OF RADIATION PROTECTION A68-81888

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE N68-32133

RADIO ELECTRONICS

AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES NPRA-STB-68-10 N68-31387

RADIO TRANSMITTERS

RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN SAM-TR-68-33 N68-31396

RADIOACTIVE CONTAMINANTS
RADIOLOGICAL CONTAMINATION DETECTED DURING CIVILIAN AIRCRAFT FLIGHTS A68-37241

RADIOACTIVE ISOTOPES
BIOLOGICAL CLEANABILITY OF SPACECRAFT SURFACES INVESTIGATED BY RADIOISOTOPE TRACER TECHNIQUES A68-38090

HISTOLOGICAL DISTRIBUTION AND RETENTION OF LEAD, RADIOACTIVE SULFUR, AND RADIOACTIVE CALCIUM IN NEW COMPACT BONE SUBSTANCE
NASA-TT-F-11862 N68-31591

RADIOBIOLOGY
THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS
ATD-68-105-108-9 N68-33037

RADIOCHEMISTRY
THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

RADIOGRAPHY
X RAY PHOTOGRAPHS OF HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS, ANALYZING CHEST FLATTENING, DIAPHRAGM POSITION AND MEDIASTINAL ORGANS A68-38237

RADIOLOGY
RADIOLOGICAL CONTAMINATION DETECTED DURING CIVILIAN AIRCRAFT FLIGHTS A68-37241

RANDOM PROCESSES
SOLVING EQUATIONS OF MOTION TO OBTAIN RELATIONSHIP BETWEEN RANDOM CREW MOTIONS AND ANGULAR CHANGE IN SPACECRAFT ORIENTATION N68-32043

RANDOM SIGNALS
HUMAN ORGANIZATION OF SYSTEM OF ACTIONS WITH RANDOM ALTERNATION OF SIGNALS AND SEARCH AND CHOICE OF ACTIONS A68-38274

RAPID EYE MOVEMENT STATE
DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF NERVOUS SYSTEM A68-81937

CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

RATES (PER TIME)
EFFECT OF SIGNAL RATE ON PERFORMANCE IN TWO KINDS OF VIGILANCE TASK A68-81948

RATS
SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION A68-38260

WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR A68-38283

PHYSIOLOGICAL EFFECTS IN RATS OF SUBSTITUTING HELIUM FOR NITROGEN UNDER HYPOXIA AND HIGH CARBON DIOXIDE CONCENTRATIONS A68-38286

NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS A68-38518

BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES A68-81830

WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION A68-81838

NOVOCAIN POTENTIATION OF CHLORPROMAZINE TRANQUILIZING PROPERTIES IN ANIMALS A68-81866

ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS A68-81874

CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

MICROMORPHOLOGICAL CHANGES IN MUSCULAR FIBERS DURING INTENSIVE PHYSICAL WORK IN ALBINO RATS A68-81889

EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLORDETHYLENE IN ADULT AND NEWBORN RATS A68-81890

LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS A68-81906

INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

INVOLVEMENT OF OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF RETICULOENDOTHELIAL SYSTEM IN RATS A68-81909

EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

RESPONSE SUPPRESSION PRODUCED BY VESTIBULAR STIMULATION IN RATS A68-81933

ROLE OF VARIOUS PARTS OF NERVOUS SYSTEM AND ENDOCRINE GLANDS IN DEVELOPMENT OF SPECIFIC AND NON-SPECIFIC RESISTANCE OF RATS A68-81943

NEGATIVE CONTRAST EFFECT OF REWARD DELAY IN DIFFERENTIAL CONDITIONING IN RATS A68-81967

TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

EFFECT OF VITAMIN D ON CALCIUM AND PHOSPHORUS CONTENT IN BONES OF ALBINO RATS WITH RELATION TO AMOUNT OF FAT AND CALCIUM IN DIETS A68-81977

CIRCADIAN RHYTHMS IN RAT MIDBRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS A68-81988

BILIARY-FECAL EXCRETION OF THYROXINE DURING COLD EXPOSURE IN RAT A68-81989

THYROXINE DEIODINATION DURING COLD EXPOSURE IN RATS AFFECTED BY VARIOUS DRUGS A68-81990

INFLUENCE OF VITAMIN D THREE ON THYROCALCITONIN ACTIVITY IN THYROID GLAND OF RATS A68-82005

CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

REACTION TIME
INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING A68-38297

REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS A68-81972

EFFECT OF STIMULUS REPETITIONS AND ALTERATIONS ON ONE-FINGER AND TWO-FINGER RESPONDING IN TWO-CHOICE REACTION TIME TO VISUAL STIMULI IN HUMANS A68-81992

TASK COMPLEXITY, ELECTRODERMAL ACTIVITY, AND REACTION TIME IN HUMANS A68-81994

EXPERIMENTAL STUDY OF TIME PERCEPTION DURING INFORMATION PROCESSING WITH SHORT INTERVALS
IZF-1968-10 N68-32407

READERS
VISUAL PERCEPTION AND IMAGE IDENTIFICATION BY READING MACHINES
FTD-MT-66-158 N68-31496

RECOVERABILITY
ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS A68-38255

RECTUM
RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

REDUCTION (CHEMISTRY)
MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS A68-38515

REFLEXES
ORIENTING REFLEX AND ATTENTION IN COGNITIVE DEVELOPMENT AS RELATED TO PROBLEM SOLVING BEHAVIOR A68-82003

EXPERIMENTAL MODELS OF RADIOELECTRONIC EQUIPMENT FOR TEMPORAL MEASUREMENTS OF HUMAN REFLEXES
FTD-MT-66-133 N68-31303

ELECTRIC STIMULI OF DOGS TO STUDY FUNCTIONAL STRUCTURE OF TEMPORARY CONNECTION IN AVOIDANCE REACTIONS
NS-59 N68-31791

REGENERATION (PHYSIOLOGY)
HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

REINFORCEMENT (PSYCHOLOGY)
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

RELATIVE BIOLOGICAL EFFECTIVENESS (RBE)
RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

HIT THEORY AND MICRODOSIMETRY APPLIED TO RELATIVE BIOLOGICAL EFFECTIVENESS PROBLEM
BNWL-SA-1753 N68-31666

RELIABILITY
RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

RENAL FUNCTION
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE A68-38663

ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

REPETITION
EFFECT OF REPETITION ON MEASUREMENTS OF POST-ROTATIONAL TURNING SENSATION AND NYSTAGMUS IN HUMANS AFTER DECELERATION FROM CONSTANT ANGULAR VELOCITIES A68-81927

REPETITION EFFECT AND SHORT-TERM MEMORY OF VISUAL STIMULI A68-81968

EFFECT OF STIMULUS REPETITIONS AND ALTERATIONS ON ONE-FINGER AND TWO-FINGER RESPONDING IN TWO-CHOICE REACTION TIME TO VISUAL STIMULI IN HUMANS A68-81992

REPORTS
LITERATURE SURVEY OF AIR REGENERATION IN SEALED ENVIRONMENTS
TDCK-50963 N68-32451

REPRODUCTIVE SYSTEMS
WEIGHTLESSNESS EFFECT ON FERTILIZED FROG EGG ABILITY TO DIVIDE, DIFFERENTIATE AND DEVELOP NORMALLY A68-39268

RESEARCH
INTERACTION OF BEHAVIORAL AND PHYSIOLOGICAL STRESS REACTIONS - PROBLEMS AND APPROACHES TO STRESS RESEARCH A68-82000

RESPIRATION
VESTIBULAR CORIOLIS REACTION EFFECT ON HUMAN RESPIRATION AND BLOOD FLOW CHANGES FROM CENTRIFUGE TESTS WITH IMPOSED HEAD NODDING A68-38087

EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

CHANGES IN RESPIRATION, OXYGEN TRANSPORT FUNCTION OF BLOOD AND OXYGEN PARAMETERS OF YOUNG HUMANS DURING HYPOXIA A68-81872

CORRELATION BETWEEN JENDRASSIK AND VALSALVA MANEUVERS - MUSCULAR REACTIONS DURING RESPIRATION A68-81899

RESPIRATORY PHYSIOLOGY
HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE A68-38285

GAS INERTANCE AND BAROMETRIC PRESSURE -

MATHEMATICAL METHODS OF MEASUREMENT
A68-82013

RESPIRATORY RATE
CONTINUOUS METHODS FOR CONTROLLING OXYGEN SUPPLY OF HUMAN BODY
N68-32148

RESPIRATORY REFLEXES
HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE
A68-38285

RESPIRATORY SYSTEM
AUTOMATIC DATA PROCESSING SYSTEM FOR STUDIES OF HUMAN EXTERNAL RESPIRATION FUNCTION PERMITTING RESPIRATORY SYSTEM CONDITION CONTROL
A68-38265

BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS
A68-38300

RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE
A68-81851

IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE
A68-81852

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS
A68-81853

PARAMETRIC PERFORMANCE ANALYSIS OF OXYGEN TRANSPORT SYSTEM
A68-81958

RESPIROMETERS
CONTINUOUS METHODS FOR CONTROLLING OXYGEN SUPPLY OF HUMAN BODY
N68-32148

RESPONSE BIAS
EXPERIMENTAL STUDY OF TIME PERCEPTION DURING INFORMATION PROCESSING WITH SHORT INTERVALS
IZF-1968-10
N68-32407

RESPONSES
RESPONSE SUPPRESSION PRODUCED BY VESTIBULAR STIMULATION IN RATS
A68-81933

INTERACTION OF BEHAVIORAL AND PHYSIOLOGICAL STRESS REACTIONS - PROBLEMS AND APPROACHES TO STRESS RESEARCH
A68-82000

RESPONSES OF HUMAN SUBJECTS TO ACUTE COLD EXPOSURE RELATED TO METABOLISM
N68-32256

REST
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION
A68-81855

EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS
A68-81922

RETICULOCYTES
INVOLVEMENT OF OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF RETICULOENDOTHELIAL SYSTEM IN RATS
A68-81909

RETINA
CORTICAL-RETINAL DISTURBANCES IN OPTICAL ANALYSOR DURING ACCELERATION
A68-38223

VISUALLY EVOKED RESPONSES IN HUMANS BY LOCALIZED RETINAL STIMULATION
A68-81920

RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852
N68-31466

RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34
N68-32088

RETINAL FLUORESCENCE ANGIOGRAPHY
SAM-TR-68-21
N68-32995

RETINAL IMAGES
VISIBILITY OF FLICKERING STABILIZED RETINAL IMAGE IN HUMANS
A68-81836

REVIEWING
STUDIES REVIEW OF PILOT PROBLEMS FOR ONE MAN FLYING UNITS IN SIMULATED LUNAR GRAVITY
NASA-TM-X-61164
N68-33437

REWARD (PSYCHOLOGY)
NEGATIVE CONTRAST EFFECT OF REWARD DELAY IN DIFFERENTIAL CONDITIONING IN RATS
A68-81967

RHYTHM (BIOLOGY)
ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT
A68-38899

EXPERIMENTAL STUDY OF BIOLOGICAL PRINCIPLE OF RHYTHMIC DEOXYRIBONUCLEIC ACID SYNTHESIS
N68-32152

REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE
N68-32153

RIBONUCLEIC ACIDS
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION
N68-33479

RODENTS
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE
A68-81891

PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE
A68-81908

ROOM TEMPERATURE
OPTIMAL ROOM TEMPERATURE FOR LIGHT PHYSICAL EXERCISE AND MENTAL PERFORMANCE
A68-81892

ROTATION
EFFECTS OF L-HYOSCINE HYDROBROMIDE ON POST ROTARY SENSATION AND NYSTAGMUS IN HUMANS
A68-81926

EFFECT OF REPETITION ON MEASUREMENTS OF POST-ROTATIONAL TURNING SENSATION AND NYSTAGMUS IN HUMANS AFTER DECELERATION FROM CONSTANT ANGULAR VELOCITIES
A68-81927

SINUSOIDAL MOTION EFFECTS ON CREW PERFORMANCE DURING SPACE FLIGHT
NASA-CR-92211
N68-31101

RUBY LASERS
RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34
N68-32088

RUPTURING
LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064
N68-32659

S

SAFETY
SAFETY MANUAL FOR PERSONNEL USING NEODYMIUM LASERS
APGC-TR-68-53
N68-32994

SAFETY DEVICES
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS
A68-38085

SALIVARY GLANDS
WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION
A68-81838

SCENEDESMUS
MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS
A68-38515

SCHEDULING
INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH USE OF COMPUTER TECHNIQUES
A68-81954

SCIENTIFIC SATELLITES
SCOPE AND PROBLEMS OF READYING EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT FOR LAUNCH AND FLIGHT
N68-32137

SCREEN EFFECT
ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS
A68-38255

SEA WATER
BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767
N68-31737

SECRETIONS
EFFECTS OF DIET VARIATION ON SECRETORY FUNCTION OF SMALL INTESTINE
RTS-4530
N68-32764

SEIZURES
SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS
A68-81935

SEMICIRCULAR CANALS
EFFERENT IMPULSATION OF VAGUS OF RABBITS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS
A68-38225

INTERACTION OF SEMICIRCULAR CANALS AND OTOLITHIC APPARATUS FROM SENSORY AND NYSTAGMIC REACTIONS OF HUMANS SUBJECTED TO POSITIVE AND NEGATIVE ACCELERATION
A68-38226

SEMICONDUCTORS (MATERIALS)
DOSIMETER FOR MEASURING INTENSITY OF DOSE OF X RAY OR GAMMA RAYS OR BOTH USING SEMICONDUCTOR MATERIAL
NASA-TT-F-11906
N68-32747

SENSITIVITY
RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE
A68-81851

IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE
A68-81852

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS
A68-81853

SENSORIMOTOR PERFORMANCE
HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153
N68-31480

COMPENSATION FOR DISPLACED VISION AND INTERSENSORY CONFLICT AS FACTOR IN ADAPTATION
N68-32259

SENSORY DEPRIVATION
ISOLATION, CONFINEMENT AND SENSORY DEPRIVATION EFFECTS ON ASTRONAUT PERFORMANCE DURING EXTENDED MANNED SPACE FLIGHTS USING THEORETICAL APPROACH
A68-39682

REPRODUCTION AND RATIO-PRODUCTION OF BRIEF DURATION UNDER CONDITIONS OF SENSORY ISOLATION
A68-81818

SENSORY FEEDBACK
HUMAN FREQUENCY RESPONSE IN PURSUIT TRACKING AS FUNCTION OF VISUAL FEEDBACK DELAY
A68-81956

SENSORY PERCEPTION
HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING
A68-38269

EXPERIMENTAL STUDY OF TIME PERCEPTION DURING INFORMATION PROCESSING WITH SHORT INTERVALS
IZF-1968-10
N68-32407

SENSORY STIMULATION
FREQUENCY SPECTRA IN VARIOUS BRAIN REGIONS OF RABBITS AND HUMANS AND THEIR CHANGES DURING VESTIBULAR AND OPTOKINETIC STIMULI
A68-81944

SHAPES
EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER
A68-81822

APPARATUS FOR MEASUREMENT OF PERCEIVED SHAPE
A68-81824

SHOCK ABSORBERS
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE
A68-38221

SHOCK SIMULATORS
AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193
N68-33005

SIGNAL ANALYSIS
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751
N68-32100

SIGNAL DETECTION
EFFECT OF SIGNAL RATE ON PERFORMANCE IN TWO KINDS OF VIGILANCE TASK
A68-81948

IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION
A68-81951

REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS
A68-81972

SIGNAL PROCESSING
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089
N68-31363

SIGNAL TRANSMISSION
HUMAN REACTIONS TO ACOUSTIC SIGNAL TRANSMISSION TO EARDRUM
N68-30948

SIGNS AND SYMPTOMS
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN
A68-81886

SIGNS AND SYMPTOMS OBSERVED IN HISTORIES OF WORKERS WITH ACUTE HYDROGEN DISULFIDE INTOXICATION
A68-81946

SIMULATION
HEAT AND MASS FLOW RATE THROUGH SEVERAL TYPES OF COMPOSITE CLOTHING UNDER SIMULATED CONDITIONS
TR-68-44-CM
N68-32519

STUDIES REVIEW OF PILOT PROBLEMS FOR ONE MAN FLYING UNITS IN SIMULATED LUNAR GRAVITY
NASA-TM-X-61164
N68-33437

SIMULATORS
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR
A68-81949

SIZE (DIMENSIONS)
ILLUSIONS AND SIZE CONSTANCY
A68-81817

PERSPECTIVE DETERMINANTS OF VISUAL SIZE-CONSTANCY IN BINOCULAR AND MONOCULAR CATS

A68-81820

EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER
A68-81822

EFFECTS OF CONTOUR SHARPNESS AND CHECK SIZE ON VISUALLY EVOKED CORTICAL POTENTIALS
A68-81835

SIZE DETERMINATION
SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203 N68-31454

SIZE SEPARATION
AVERAGING OF SPACE AND NUMBER STIMULI WITH SIMULTANEOUS PRESENTATION A68-81965

SKIN (ANATOMY)
CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

ASTRONAUT PERSONAL HYGIENE REQUIREMENTS FOR NORMAL SKIN FUNCTIONING DURING PROLONGED SPACE FLIGHTS
A68-38312

ELECTRODE PROBLEMS IN RECORDING SKIN RESPONSES IN FREELY MOVING SUBJECTS NOTING IMPLANTATION, ELECTROMECHANICAL AND RADIO SIGNAL INTERFERENCE
A68-38517

EFFECT OF MICROWAVES AT X BAND ON GUINEA PIG SKIN IN TISSUE CULTURE - MICROWAVE APPARATUS FOR EXPOSING TISSUE AND EFFECT OF RADIATION ON SKIN RESPIRATION A68-81928

EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

SLEEP
EFFECTS OF AMPHETAMINE ON SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS A68-81916

DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF NERVOUS SYSTEM
A68-81937

CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

SLEEP DEPRIVATION
REVIEW OF EFFECTS OF SLEEP DEPRIVATION IN HUMANS
A68-81843

AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193 N68-33005

SOCIAL ISOLATION
RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

BIOLOGICAL RHYTHMS IN MAN, ANIMALS AND PLANTS
A68-38902

ISOLATION, CONFINEMENT AND SENSORY DEPRIVATION EFFECTS ON ASTRONAUT PERFORMANCE DURING EXTENDED MANNED SPACE FLIGHTS USING THEORETICAL APPROACH
A68-39682

PSYCHIATRIC EXPERIENCE OF PHYSICIAN DURING EIGHT-WEEK POLARIS SUBMARINE PATROLS
A68-81919

INTER AND INTRA-INDIVIDUAL DESYNCHRONIZATION AND BEHAVIOR STUDIED IN ISOLATED GROUP EXPERIMENT
N68-32151

SODIUM
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE A68-38663

INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS A68-81931

SODIUM CHLORIDES
ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE
A68-81884

CHANGE OF SALT CONCENTRATION OF INFLOWING WASTE AFFECTING YIELD OF BIOLOGICAL SOLIDS AND ABILITY OF CONTINUOUS CULTURED MICROBES TO REMOVE SUBSTRATE A68-81924

SODIUM FLUORIDES
SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

SODIUM 24
EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES A68-81830

SOILS
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

SOLAR RADIATION
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

SOLAR SIMULATORS
ULTRAVIOLET MERCURY RADIATION SOURCE DESIGNED FOR BIOLOGICAL SIMULATION EXPERIMENTS
N68-32143

SOLVENTS
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION
N68-33479

SONIC BOOMS
AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193 N68-33005

SOUND FIELDS
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

SOUND PRESSURE
HUMAN REACTIONS TO ACOUSTIC SIGNAL TRANSMISSION TO EARDRUM N68-30948

SPACE ENVIRONMENT SIMULATION
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE A68-38083

MANNED ORBITAL LABORATORY CENTRIFUGE RADIUS EFFECTS ON ASTRONAUT PERFORMANCE OF ENTRY TASKS FROM APOLLO ENTRY SIMULATION TESTS
A68-38088

HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION
A68-38290

QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS DURING ACCELERATED OBSERVER MOVEMENT AND CONSTANT VELOCITY A68-39681

SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

SPACE FLIGHT
SURVIVAL OF LIVING ORGANISMS IN SPACE VEHICLES STUDIED FROM RESULTS OF BIOLOGICAL EXPERIMENTS A68-37237

THERMAL CHARACTERISTICS OF SPACE FLIGHT AND PRINCIPLES OF HEAT REGULATION, DISCUSSING SPACE VEHICLE PROTECTION AND CLOTHING A68-37239

ASTRONAUT PERSONAL HYGIENE REQUIREMENTS FOR NORMAL SKIN FUNCTIONING DURING PROLONGED SPACE FLIGHTS A68-38312

CARDIOVASCULAR DECONDITIONING AFTER SPACE TUMBLING
SAM-TR-68-32 N68-32800

LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS
ATD-68-105-108-9 N68-33037

SPACE FLIGHT FEEDING
MATHEMATICAL METHOD TO SELECT FOOD RATION WITH PRESCRIBED COMPOSITION AND CALORIFIC VALUE FROM LIMITED ASSORTMENT OF PRODUCTS A68-38306

HETEROTROPHIC ORGANISMS AS HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS A68-38307

CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH A68-38321

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

TILAPIA FISH AS POSSIBLE COMPONENT OF SPACECRAFT LIFE SUPPORT SYSTEMS A68-38324

GROWTH OF TILAPIA FISH KEPT ON NORMAL ANIMAL, MIXED AND VEGETABLE FOOD A68-38325

GROWTH OF TILAPIA FISH KEPT ON DRY CHLORELLA DIET COMBINED WITH OTHER FODDER A68-38326

CULTIVATING PLANTS FOR CLOSED ECOLOGICAL SYSTEMS DURING LONG MANNED SPACE FLIGHTS
JPRS-46306 N68-33269

SPACE FLIGHT STRESS
SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING A68-38269

METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE
NASA-CR-96450 N68-33333

SPACE FLIGHT TRAINING
NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA A68-38289

SPACE MAINTENANCE
CHARACTERISTICS, CONSTRAINTS, AND IMPLICATIONS OF LONG DURATION SPACE MISSIONS BASED ON USE OF AVAILABLE HARDWARE AND MAINTENANCE/REPAIR ACTIONS IN SPACE
NASA-CR-73239 N68-32163

SPACE MISSIONS
OBJECTIVES AND CRITERIA FOR STERILIZATION AND DECONTAMINATION OF SPACE VEHICLES, STRESSING MARS MISSIONS A68-38076

SPACE ORIENTATION
EGOCENTRIC LOCALIZATION OF VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE DEFECTIVE OBSERVERS FOR VARIOUS HEAD AND BODY TILTS A68-39327

HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY
NASA-CR-96290 N68-33241

SPACE PERCEPTION
SOVIET BOOK ON SPACE AND TIME PERCEPTION IN OUTER SPACE, DISCUSSING COSMONAUT ROLE IN MAN VEHICLE SYSTEM A68-38335

SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

TWO-DIMENSIONAL FIELD EFFECTS AND STATIC SLANT PERCEPTION OF HUMANS VIEWING MONOCULARLY A68-81879

CHANGE IN LATERAL DISPLACEMENT OF FORM PRODUCING CORRESPONDING INCREASES OF DEPTH OF PLANAR SURFACE A68-81921

SPACE RATIONS
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

MATHEMATICAL METHOD TO SELECT FOOD RATION WITH PRESCRIBED COMPOSITION AND CALORIFIC VALUE FROM LIMITED ASSORTMENT OF PRODUCTS A68-38306

FOOD RATIONS FOR ASTRONAUTS ON LONG DURATION SPACE FLIGHTS
JPRS-46002 N68-31511

SPACE SUITS
INTEGRATED SYSTEM OF MOBILITY NOTATION AND STANDARD TECHNIQUES FOR MEASUREMENT OF SPACESUIT MOBILITY A68-81957

SPACECRAFT CABIN ATMOSPHERES
TEMPERATURE-ENTROPY DIAGRAM FOR 80-20 OXYGEN-NITROGEN SPACE CABIN ATMOSPHERE A68-37183

CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA A68-38284

PHYSIOLOGICAL EFFECTS IN RATS OF SUBSTITUTING HELIUM FOR NITROGEN UNDER HYPOXIA AND HIGH CARBON DIOXIDE CONCENTRATIONS A68-38286

HELIUM-OXYGEN MIXTURE BREATHING EFFECTS ON VOCAL FREQUENCY AND AMPLITUDE, NOTING SUBSTANTIAL QUALITY DETERIORATION OF COMMUNICATIONS A68-38287

NORMALIZATION OF NOISE PRODUCED BY LIFE SUPPORT SYSTEMS IN SPACESHIP CABINS DURING PROLONGED FLIGHTS A68-38298

REVIEW OF SOVIET PAPERS CONCERNING AIR MEDIA STATE IN AIRTIGHT MANNED VOLUMES, DISCUSSING TOXICOLOGY OF POLYMER MATERIALS A68-39200

SPACECRAFT CABIN SIMULATORS
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS

AFTER PROLONGED CONFINEMENT A68-38311

SPACECRAFT CABINS
CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

SPACECRAFT CONTAMINATION
CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

SPACE HARDWARE MICROBE CONTAMINATION ASSESSMENT FOR AEROBIC AND ANAEROBIC SPORES, DISCUSSING EXTENDED INCUBATION AND ENRICHED MEDIA FOR RECOVERY A68-38666

SPACECRAFT CONTROL
ASTRONAUT MOTION EFFECT ON PRECISE CONTROL OF SPACECRAFT ATTITUDE A68-37790

RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

SPACECRAFT ENVIRONMENTS
PHYSIOLOGICAL AND HYGIENIC REQUIREMENT OF LIFE SUPPORT SYSTEMS OF VOSTOK AND VOSKHOD SPACE SHIPS A68-38282

SPACECRAFT LANDING
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE A68-38221

SPACECRAFT MODELS
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

SPACECRAFT ORBITS
SOLVING EQUATIONS OF MOTION TO OBTAIN RELATIONSHIP BETWEEN RANDOM CREW MOTIONS AND ANGULAR CHANGE IN SPACECRAFT ORIENTATION N68-32043

SPACECRAFT STERILIZATION
OBJECTIVES AND CRITERIA FOR STERILIZATION AND DECONTAMINATION OF SPACE VEHICLES, STRESSING MARS MISSIONS A68-38076

STERILIZATION REQUIREMENTS FOR SPACE VEHICLES, DISCUSSING PLANETARY QUARANTINE CONSTRAINTS EFFECTS ON HARDWARE A68-38077

SPACE VEHICLE STERILIZATION AND DECONTAMINATION, DISCUSSING DRY HEAT STERILIZATION AND CAPSULE SYSTEM ADVANCED DEVELOPMENT A68-38078

BIOLOGICAL CLEANABILITY OF SPACECRAFT SURFACES INVESTIGATED BY RADIOISOTOPE TRACER TECHNIQUES A68-38090

SPACE HARDWARE MICROBE CONTAMINATION ASSESSMENT FOR AEROBIC AND ANAEROBIC SPORES, DISCUSSING EXTENDED INCUBATION AND ENRICHED MEDIA FOR RECOVERY A68-38666

SPACECREWS
HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH USE OF COMPUTER TECHNIQUES A68-81954

SINUSOIDAL MOTION EFFECTS ON CREW PERFORMANCE DURING SPACE FLIGHT
NASA-CR-92211 N68-31101

COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS
JPRS-46173 N68-32901

SPEECH
PAIRED-ASSOCIATE LEARNING RELATED TO PRONUNCIATION AND WORD FREQUENCY A68-81902

SPEECH RECOGNITION
AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

SPINACH
AMINO ACID SEQUENCE DETERMINED FROM DIGESTS OF SPINACH FERREDOXIN, NOTING SIMILARITY TO BACTERIAL FERREDOXINS A68-38519

SPINAL CORD
EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

X RAY EFFECTS ON PHOSPHOLIPIDE AND PRESSURES
NASA-CR-96228 N68-32427

COMBINED EFFECTS OF VIBRATION AND IONIZING RADIATION ON FUNCTIONAL STATE OF SPINAL REFLEX ARC OF GUINEA PIGS N68-33287

SPIRALS
STIMULUS SIZE AND VIEWING DISTANCE EFFECTS ON DURATION OF ILLUSORY MOTION IN SPIRAL AFTEREFFECT
FAA-AM-68-10 N68-32920

SPORES
SPACE HARDWARE MICROBE CONTAMINATION ASSESSMENT FOR AEROBIC AND ANAEROBIC SPORES, DISCUSSING EXTENDED INCUBATION AND ENRICHED MEDIA FOR RECOVERY A68-38666

STATIC LOADS
BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

STATISTICAL ANALYSIS
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

STATISTICAL PUBLIC OPINION RESEARCH TO CHECK RELIABILITY OF PILOT OPINIONS ON AIRCRAFT FLIGHT CHARACTERISTICS
ICAS PAPER 68-17 A68-39209

STEREOSCOPIC VISION
CHANGE IN LATERAL DISPLACEMENT OF FORM PRODUCING CORRESPONDING INCREASES OF DEPTH OF PLANAR SURFACE A68-81921

STERILIZATION
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

STEROIDS
STEROL BIOSYNTHESIS PATHWAYS IN CHLORELLA ELLIPSOIDEA, DISCUSSING FUCOSTEROL CONVERSION TO CLIONASTEROL A68-39267

STOMACH
GASTRIC PRESSURES RECORDED BY TELEMETRIC METHODS IN FASTING HUMANS A68-81826

STREPTOMYCETES
STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

STRESS (BIOLOGY)
SPACE BIOLOGY, SURVEYING BASIC STRESS BIOLOGY A68-37064

STRESS (PHYSIOLOGY)
CARBOHYDRATE AND LIPID METABOLISM AND RELATION TO AUTONOMIC NERVOUS SYSTEM AND ENVIRONMENTAL STRESS A68-81832

EXCRETION OF BILE ACIDS IN RABBITS DURING FUNCTIONAL STRESS OF NERVOUS SYSTEM OF INTENSE ACTIVITY A68-81883

INTERACTION OF BEHAVIORAL AND PHYSIOLOGICAL STRESS REACTIONS - PROBLEMS AND APPROACHES TO STRESS RESEARCH A68-82000

HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY AMRL-TR-67-119 N68-31190

COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE TR-25 N68-31335

STRESS (PSYCHOLOGY)
ELECTROCARDIOGRAPHIC ACTIVITY DURING MENTAL AND EMOTIONAL STRESS A68-81982

INTERACTION OF BEHAVIORAL AND PHYSIOLOGICAL STRESS REACTIONS - PROBLEMS AND APPROACHES TO STRESS RESEARCH A68-82000

EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING TR-12 N68-31881

STRESS MEASUREMENT
CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

STRUCTURAL ANALYSIS
REVIEW OF LITERATURE ON STRUCTURE OF CELL MEMBRANES RTS-4481 N68-32664

SUBMARINES
PSYCHIATRIC EXPERIENCE OF PHYSICIAN DURING EIGHT-WEEK POLARIS SUBMARINE PATROLS A68-81919

SULFUR COMPOUNDS
BINDING OF SULFHYDRYL TO NORMAL AND IRRADIATED RABBIT LEUCOCYTE LYSOSOMES A68-81880

SUPINE POSITION
HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

SURVIVAL
SURVIVAL OF LIVING ORGANISMS IN SPACE VEHICLES STUDIED FROM RESULTS OF BIOLOGICAL EXPERIMENTS A68-37237

EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES A68-81830

SURVIVAL EQUIPMENT
PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT COMPATIBLE WITH SERVICEABILITY REQUIREMENTS A68-38482

SWITCHING CIRCUITS
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM TR-43 N68-31734

SYNCHRONISM
SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS A68-81935

ELECTROMYOGRAMS IN RELATION TO SYNCHRONIZATION OF MOTOR NEURONS IN HEALTHY AND DISEASED PERSONS A68-81940

SYNCOPE
BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

SYSTEMS ENGINEERING
METHOD OF EVALUATING LARGE NUMBERS OF SYSTEM ALTERNATIVES IN MAN MACHINE SYSTEM SITUATIONS A68-81947

ENERGY CONSIDERATIONS AS DETERMINANTS OF SYSTEM DESIGN IN MAN MACHINE SYSTEMS A68-81953

HUMAN FACTORS AND MANS ROLE IN MAN MACHINE SYSTEMS APPLIED TO ALLOCATIVE DECISION MAKING AD-671128 N68-31149

SYSTEMS AND TEST SPECIFICATIONS FOR DEVELOPING SPACE RESEARCH HUMAN CENTRIFUGE ENGINEERING PROTOTYPE FOR APOLLO APPLICATIONS PROGRAM ORBITAL ONBOARD EXPERIMENT NASA-CR-66650 N68-33297

T

TACHISTOSCOPES
SENSORY TRACES VERSUS PSYCHOLOGICAL MOMENT IN TEMPORAL ORGANIZATION OF FORM A68-81966

TACTILE DISCRIMINATION
TACTILE-KINESTHETIC PERCEPTION OF LENGTH A68-81821

TASK COMPLEXITY
EVALUATION OF THREE APPROACHES TO FIGURAL ORGANIZATION USING PAIRED-ASSOCIATES DISCRIMINATION-LEARNING TASK VARYING IN COMPLEXITY A68-81819

EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER A68-81822

UNIT SIZE AND INTERPOLATED-TASK DIFFICULTY AS DETERMINANTS OF SHORT-TERM RETENTION A68-81963

MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

TWO-CHOICE DISCRIMINATION LEARNING AS FUNCTION OF VISUAL STIMULUS AND EVENT PROBABILITIES A68-81969

RECEIVER OPERATING CHARACTERISTICS FOR DISCRIMINATION OF LINEAR EXTENT A68-81974

COORDINATION OF MOVEMENTS OF EYES AND HAND IN VARIOUS MOTOR TASKS A68-81978

TASK COMPLEXITY, ELECTRODERMAL ACTIVITY, AND REACTION TIME IN HUMANS A68-81994

TASKS
FLIGHT SURGEONS DUTIES IN UNITED STATES ARMY AVIATION MISSIONS IN REPUBLIC OF VIETNAM A68-81839

MANUAL GUIDANCE IN LEARNING PURSUIT TRACKING TASK A68-81903

TEETH
DEODORIZING AND REFRESHING EFFECTS OF TOOTHPASTES AND ORAL PREPARATIONS INVESTIGATED FOR SELECTION FOR ASTRONAUT HYGIENE A68-38313

TEFLON (TRADEMARK)
TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETER CHARACTERISTICS BNWL-741 N68-32943

TELEMETRY
TELEMETRIC MEASURING METHODS IN AEROSPACE MEDICINE A68-37189

TEMPERATURE
CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

TEMPERATURE CONTROL
THERMAL CHARACTERISTICS OF SPACE FLIGHT AND PRINCIPLES OF HEAT REGULATION, DISCUSSING SPACE VEHICLE PROTECTION AND CLOTHING A68-37239

TEMPERATURE EFFECTS
TEMPERATURE-ENTROPY DIAGRAM FOR 80-20 OXYGEN-NITROGEN SPACE CABIN ATMOSPHERE A68-37183

ASTRONAUT PROTECTION AGAINST EXTREME TEMPERATURE CHANGES NOTING PHYSIOLOGICAL AND PHYSICAL MECHANISMS FOR ADAPTATION TO COLD AND HEAT A68-37240

HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING A68-38297

PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

TERRESTRIAL RADIATION
INSULATED-LABORATORY TESTS OF EFFECTS OF WEAK TERRESTRIAL ELECTROMAGNETIC RADIATION ON CIRCADIAN PERIODICITY OF MAN N68-32150

TEST CHAMBERS
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

TESTS
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

THERAPY
EFFECT OF EXERCISE ON PREVENTION AND THERAPY OF CORONARY HEART DISEASE A68-81828

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS A68-81853

THERMAL PROTECTION
THERMAL CHARACTERISTICS OF SPACE FLIGHT AND PRINCIPLES OF HEAT REGULATION, DISCUSSING SPACE VEHICLE PROTECTION AND CLOTHING A68-37239

ASTRONAUT PROTECTION AGAINST EXTREME TEMPERATURE CHANGES NOTING PHYSIOLOGICAL AND PHYSICAL MECHANISMS FOR ADAPTATION TO COLD AND HEAT A68-37240

THERMOLUMINESCENCE
TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETER CHARACTERISTICS
BNWL-741 N68-32943

ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS
BNWL-SA-1569 N68-33498

THERMOREGULATION
AUTONOMIC NERVOUS SYSTEM AND PHYSIOLOGIC THERMOREGULATION OF BODY TEMPERATURE A68-81831

DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

THIOLS
WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION A68-81838

THORAX
X RAY PHOTOGRAPHS OF HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS, ANALYZING CHEST FLATTENING, DIAPHRAGM POSITION AND MEDIASTINAL ORGANS A68-38237

THRESHOLDS (PERCEPTION)
THRESHOLD VALUES AND PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION A68-81837

AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

THYROID GLAND
RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS A68-38254

NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS A68-81827

ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

INFLUENCE OF VITAMIN D THREE ON THYROCALCITONIN ACTIVITY IN THYROID GLAND OF RATS A68-82005

THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

THYROXINE
BILIARY-FECAL EXCRETION OF THYROXINE DURING COLD EXPOSURE IN RAT A68-81989

THYROXINE DEIODINATION DURING COLD EXPOSURE IN RATS AFFECTED BY VARIOUS DRUGS A68-81990

TIME
SOVIET BOOK ON SPACE AND TIME PERCEPTION IN OUTER SPACE, DISCUSSING COSMONAUT ROLE IN MAN VEHICLE SYSTEM A68-38335

PRIOR RECALL OF NEWLY LEARNED ITEMS AND RECENCY EFFECT IN FREE RECALL A68-81900

REPETITION EFFECT AND SHORT-TERM MEMORY OF VISUAL STIMULI A68-81968

SPATIAL VISUAL ENCODING STRATEGIES IN SEQUENTIAL SHORT-TERM MEMORY A68-81973

PSYCHOLOGIC AND PHYSIOLOGIC RESPONSES OF PSYCHIATRIC PATIENTS AND NORMALS DURING FIFTY HOURS OF WAKEFULNESS A68-81997

TIME DEPENDENCE
EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687 N68-31891

TIME DISCRIMINATION
ADULT NERVOUS SYSTEM INCORPORATES DESCRIPTION OF TIME INTERVAL SETS FOR AUTOMATIC CONTROL OF RATE OF MOTIONS, DISCUSSING ACCURACY OF ORGANIZED SEQUENCE OF MOTIONS A68-38272

TIME CHARACTERISTICS OF FINGER MOTIONS OF EACH HAND WHEN TEST SUBJECTS CHOSE RATES OF MOTION A68-38275

EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS A68-38276

REPRODUCTION AND RATIO-PRODUCTION OF BRIEF DURATION UNDER CONDITIONS OF SENSORY ISOLATION

A68-81818

SPATIAL SEPARATION OF TWO LIGHT-FLASHES AND THEIR PERCEIVED SEPARATION IN TIME A68-81823

INTER AND INTRA-INDIVIDUAL DESYNCHRONIZATION AND BEHAVIOR STUDIED IN ISOLATED GROUP EXPERIMENT N68-32151

EXPERIMENTAL STUDY OF TIME PERCEPTION DURING INFORMATION PROCESSING WITH SHORT INTERVALS IZF-1968-10 N68-32407

TIME MEASURING INSTRUMENTS
EXPERIMENTAL MODELS OF RADIOELECTRONIC EQUIPMENT FOR TEMPORAL MEASUREMENTS OF HUMAN REFLEXES FTD-MT-66-133 N68-31303

TIME SHARING
IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION A68-81951

PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM BBN-1687 N68-31891

TIME SIGNALS
ELECTROPHYSIOLOGICAL STUDY OF CONDITIONED REACTIONS TO TIME IN HUMANS A68-81981

TISSUES (BIOLOGY)
MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN PRECORONARY REGION OF CANINE CEREBRAL CORTEX AS RESULT OF TRANSVERSE G FORCES A68-38235

MICROMORPHOLOGICAL CHANGES IN MUSCULAR FIBERS DURING INTENSIVE PHYSICAL WORK IN ALBINO RATS A68-81889

PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA AR-2 N68-30963

EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES PB-176914 N68-31315

TOBACCO
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION N68-33479

TOLERANCES (PHYSIOLOGY)
ROLE OF VARIOUS PARTS OF NERVOUS SYSTEM AND ENDOCRINE GLANDS IN DEVELOPMENT OF SPECIFIC AND NON-SPECIFIC RESISTANCE OF RATS A68-81943

TOUCH
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS A68-81972

TOXIC DISEASES
AMMONIA IN GASTRIC JUICE OF PATIENTS WITH CHRONIC INTOXICATION BY NITRODERIVATIVES OF BENZENE AND ITS HOMOLOGUES A68-81987

TOXIC HAZARDS
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

GASEOUS TOXIC SUBSTANCES LIBERATED BY HUMAN URINE AT 38 C AND BY SAMPLES STORED AT 18 TO 20 C A68-38315

TOXICITY
MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLOROETHYLENE IN ADULT AND NEWBORN RATS A68-81890

TOXICITY AND SAFETY HAZARD
MUSCULOSKELETAL CHANGES IN CHRONIC INTOXICATION WITH AGENTS OF BENZOL SERIES A68-81873

TOXICOLOGY
ALCOHOL AS CONTRIBUTORY FACTOR IN MILITARY AIRCRAFT ACCIDENT FATALITIES FROM POSTMORTEM TOXICOLOGICAL DATA A68-38092

REVIEW OF SOVIET PAPERS CONCERNING AIR MEDIA STATE IN AIRTIGHT MANNED VOLUMES, DISCUSSING TOXICOLOGY OF POLYMER MATERIALS A68-39200

TRACKING (POSITION)
VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS A68-81961

TRAINING DEVICES
AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES NPRA-STB-68-10 N68-31387

TRANQUILIZERS
COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

TRANSMITTERS
DESIGN OF SUBMINIATURE CRYSTAL CONTROLLED BIOLOGICAL TRANSMITTER FOR INTERNAL OR EXTERNAL USE A68-81814

TRITIUM
ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS BNWL-SA-1569 N68-33498

TUMBLING MOTION
CARDIOVASCULAR DECONDITIONING AFTER SPACE TUMBLING SAM-TR-68-32 N68-32800

U

U.S.S.R.
SUMMARY INFORMATION ON SOVIET RESEARCH IN TELEPATHY AND APPLICATION OF COMMUNICATION THEORY TECHNIQUES TO TELEPATHIC COMMUNICATION N68-32034

METHODS AND RESULTS OF EARLY AND RECENT SOVIET THEORETICAL AND EXPERIMENTAL RESEARCH IN TELEPATHY N68-32035

ANALYSIS OF SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION BASED ON FRAMEWORK OF INFORMATION AND COMMUNICATION THEORIES N68-32036

LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS ATD-68-105-108-9 N68-33037

ULTRAHIGH VACUUM
ULTRAHIGH VACUUM CHAMBER DESIGN AND EXPERIMENTS TO DETERMINE BIOLOGICAL EFFECTS ON BACTERIA N68-32138

ULTRAVIOLET RADIATION
MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER A68-81813

ULTRAVIOLET MERCURY RADIATION SOURCE DESIGNED FOR BIOLOGICAL SIMULATION EXPERIMENTS N68-32143

EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND

ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION
N68-33479

UNDERWATER TESTS
WATER IMMERSION AND BODY POSITION EFFECTS ON HUMAN PERFORMANCE IN USE OF VESTIBULAR SENSE FOR GRAVITATIONAL VERTICAL PERCEPTION
A68-38084

URIC ACID
ASYMPTOMATIC HYPERURICEMIA IN AIRLINE PILOTS INVESTIGATED BY BLOOD ASSAYS FOR ELEVATED URIC ACID CONCENTRATION A68-38093

URINALYSIS
EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR
A68-81877

URINE
GASEOUS TOXIC SUBSTANCES LIBERATED BY HUMAN URINE AT 38 C AND BY SAMPLES STORED AT 18 TO 20 C
A68-38315

METHOD OF QUANTITATIVE DETERMINATION OF EPINEPHRINE AND NOREPINEPHRINE IN URINE
A68-81865

TESTOSTERONE PRODUCTION AND HORMONE METABOLISM OF MEN IN HIGH ALTITUDE ENVIRONMENTS
AR-2 N68-31059

V

V/STOL AIRCRAFT
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

VACUUM CHAMBERS
ULTRAHIGH VACUUM CHAMBER DESIGN AND EXPERIMENTS TO DETERMINE BIOLOGICAL EFFECTS ON BACTERIA
N68-32138

VALSALVA EXERCISE
CORRELATION BETWEEN JENDRASSIK AND VALSALVA MANEUVERS - MUSCULAR REACTIONS DURING RESPIRATION A68-81899

VASCULAR SYSTEM
SINGLE AND MULTIPLE ACCELERATION EFFECTS ON DOG LUNGS, DISCUSSING CHANGES IN VASCULAR AND PARENCHYMAL STRUCTURE A68-38238

EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

VASOCONSTRICTION
MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION
A68-81869

DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

VASODILATION
DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

VEINS
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE A68-38663

VELOCITY
ESTIMATION OF VEHICULAR VELOCITY AS FUNCTION OF VISUAL STIMULATION A68-81950

PROPOSED EXPLANATION OF MOTION PERCEPTION IN TERMS OF AMBIENT ARRAY OF LIGHT A68-82001

VERTEBRAL COLUMN
VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

VERTICAL PERCEPTION
WATER IMMERSION AND BODY POSITION EFFECTS ON HUMAN PERFORMANCE IN USE OF VESTIBULAR SENSE FOR GRAVITATIONAL VERTICAL PERCEPTION
A68-38084

VERTIGO
HISTOPATHOLOGIC BASIS OF DISORDERS OF PERIPHERAL VESTIBULAR SYSTEM PRODUCING VERTIGO
A68-81811

NEUROLOGICAL ASPECTS OF DIFFERENTIAL DIAGNOSIS OF VERTIGO A68-81812

VESTIBULAR TESTS
DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION A68-37768

WATER IMMERSION AND BODY POSITION EFFECTS ON HUMAN PERFORMANCE IN USE OF VESTIBULAR SENSE FOR GRAVITATIONAL VERTICAL PERCEPTION
A68-38084

VESTIBULAR CORIOLIS REACTION EFFECT ON HUMAN RESPIRATION AND BLOOD FLOW CHANGES FROM CENTRIFUGE TESTS WITH IMPOSED HEAD NODDING
A68-38087

HUMAN VEGETATIVE REACTIONS UNDER ANGULAR ACCELERATIONS NOTING NO DEPENDENCE ON MAGNITUDE
A68-38224

MATHEMATICAL MODEL OF OTOCONIA TO STUDY VESTIBULAR ANALYSOR UNDER WEIGHTLESSNESS A68-38228

CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING
A68-38229

REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

HISTOPATHOLOGIC BASIS OF DISORDERS OF PERIPHERAL VESTIBULAR SYSTEM PRODUCING VERTIGO
A68-81811

RESPONSE SUPPRESSION PRODUCED BY VESTIBULAR STIMULATION IN RATS A68-81933

PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES
NASA-CR-96199 N68-32424

COMBINED EFFECTS OF VIBRATION AND GAMMA RADIATION ON VESTIBULAR APPARATUS OF GUINEA PIGS
N68-33286

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

VESTIBULES
TRIAXIAL MULTIPLE CHANNEL ACCELEROMETER MODULE FOR VESTIBULAR STIMULATION MEASUREMENTS IN AIRCRAFT
NASA-CR-96298 N68-32734

VIBRATION
REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS A68-81972

SIDE TO SIDE HEAD VIBRATION EFFECTS ON VISUAL ACUITY MEASUREMENTS
NASA-CR-96466 N68-33093

VIBRATION EFFECTS
IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS
A68-38251

VIBRATION AND ACCELERATION EFFECT ON ANIMALS

EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

VIBRATIONAL AND LINEAR ACCELERATIONS EFFECTS ON FISH NOTING FREQUENCY OF VIBRATION ROLE A68-38327

EFFECTS OF VIBRATION AND GAMMA, IONIZING, OR X RAY RADIATION ON GUINEA PIGS AND MICE FTD-MT-24-142-67 N68-33285

COMBINED EFFECTS OF VIBRATION AND GAMMA RADIATION ON VESTIBULAR APPARATUS OF GUINEA PIGS N68-33286

COMBINED EFFECTS OF VIBRATION AND IONIZING RADIATION ON FUNCTIONAL STATE OF SPINAL REFLEX ARC OF GUINEA PIGS N68-33287

VIBRATION TESTS
COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE N68-33288

VIBRATIONAL SPECTRA
VIBRATIONAL AND LINEAR ACCELERATIONS EFFECTS ON FISH NOTING FREQUENCY OF VIBRATION ROLE A68-38327

VIBRATIONAL STRESS
SYMPATHOADRENAL SYSTEM IN PATIENTS WITH VIBRATION DISEASE A68-81986

VIRUSES
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION N68-33479

VISIBILITY
VISIBILITY OF FLICKERING STABILIZED RETINAL IMAGE IN HUMANS A68-81836

VISION
CRITICAL FLICKER FUSION FREQUENCY USED AS A METHOD OF DETERMINATION OF EFFECT OF GLARE IN MAN A68-81904

VISUAL ACUITY
SIDE TO SIDE HEAD VIBRATION EFFECTS ON VISUAL ACUITY MEASUREMENTS
NASA-CR-96466 N68-33093

VISUAL CONTROL
CHANGING GRAVITY CONDITIONS EFFECTS ON HUMAN COORDINATION INDICES, NOTING ACCURACY OF CONTROL LEVER OPERATION BLINDFOLDED OR BY VISUAL CONTROL A68-38279

VISUAL DISCRIMINATION
RECEIVER OPERATING CHARACTERISTICS FOR DISCRIMINATION OF LINEAR EXTENT A68-81974

HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY
AMRL-TR-67-119 N68-31190

NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089 N68-31363

VISUAL FIELDS
TWO-DIMENSIONAL FIELD EFFECTS AND STATIC SLANT PERCEPTION OF HUMANS VIEWING MONOCULARLY A68-81879

VISUAL PERCEPTION
INTRAOCULAR EFFECTS ON FLASH BLINDNESS, MEASURING DISPLAY DETECTION TIMES FOLLOWING LIGHT ADAPTATION AREAS EXPOSURE IN VARIOUS RETINAL LOCATIONS A68-38091

EGOCENTRIC LOCALIZATION OF VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE DEFECTIVE OBSERVERS FOR VARIOUS HEAD AND BODY TILTS A68-39327

VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS DURING ACCELERATED OBSERVER MOVEMENT AND CONSTANT VELOCITY A68-39681

SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

APPARATUS FOR MEASUREMENT OF PERCEIVED SHAPE A68-81824

REVIEW OF CURRENT WORK ROLE OF EVOKED POTENTIALS OF BRAIN IN VISUAL PERCEPTION A68-81894

EFFECTS OF MUTUAL RELEVANCE OF STIMULI IN RIGHT AND LEFT VISUAL HEMIFIELDS ON ORGANIZATIONAL PROCESSES OF PATTERN PERCEPTION A68-81901

SENSORY TRACES VERSUS PSYCHOLOGICAL MOMENT IN TEMPORAL ORGANIZATION OF FORM A68-81966

THEORETICAL EXPRESS DERIVED FOR LEAST DISTINGUISHABLE STEP IN NUMBER OF PULSES FROM AREA WHOSE IMAGE IS FOCUSED ON AND MEASURED BY SINGLE PHOTOEMISSIVE DETECTOR A68-81999

PROPOSED EXPLANATION OF MOTION PERCEPTION IN TERMS OF AMBIENT ARRAY OF LIGHT A68-82001

VISUAL PERCEPTION AND IMAGE IDENTIFICATION BY READING MACHINES
FTD-MT-66-158 N68-31496

INFORMATION LOSS IN VISUAL PREPERCEPTUAL SYSTEM N68-32309

VISUAL PHOTOMETRY
SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY N68-32573

VISUAL SIGNALS
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

VISUAL STIMULI
VISUAL SUPPRESSION DURING PASSIVE EYE MOVEMENT COMPARED TO ACTIVE EYE MOVEMENT TO DETERMINE ORIGIN AS RETINAL OR CENTRAL A68-39106

ILLUSIONS AND SIZE CONSTANCY A68-81817

EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER A68-81822

EFFECTS OF CONTOUR SHARPNESS AND CHECK SIZE ON VISUALLY EVOKED CORTICAL POTENTIALS A68-81835

THRESHOLD VALUES AND PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION A68-81837

DEPENDENCE OF AMPLITUDE OF FUSIONAL CONVERGENCE MOVEMENTS ON VELOCITY OF ELICITING FOVEAL STIMULI A68-81842

TWO-DIMENSIONAL FIELD EFFECTS AND STATIC SLANT PERCEPTION OF HUMANS VIEWING MONOCULARLY A68-81879

EFFECTS OF MUTUAL RELEVANCE OF STIMULI IN RIGHT AND LEFT VISUAL HEMIFIELDS ON ORGANIZATIONAL PROCESSES OF PATTERN PERCEPTION A68-81901

PAIRED-ASSOCIATE LEARNING RELATED TO PRONUNCIATION AND WORD FREQUENCY A68-81902

VISUALLY EVOKED RESPONSES IN HUMANS BY LOCALIZED RETINAL STIMULATION A68-81920

ESTIMATION OF VEHICULAR VELOCITY AS FUNCTION OF VISUAL STIMULATION A68-81950

UNIT SIZE AND INTERPOLATED-TASK DIFFICULTY AS DETERMINANTS OF SHORT-TERM RETENTION A68-81963

AVERAGING OF SPACE AND NUMBER STIMULI WITH SIMULTANEOUS PRESENTATION A68-81965

SENSORY TRACES VERSUS PSYCHOLOGICAL MOMENT IN TEMPORAL ORGANIZATION OF FORM A68-81966

REPETITION EFFECT AND SHORT-TERM MEMORY OF VISUAL STIMULI A68-81968

TWO-CHOICE DISCRIMINATION LEARNING AS FUNCTION OF VISUAL STIMULUS AND EVENT PROBABILITIES A68-81969

SPATIAL VISUAL ENCODING STRATEGIES IN SEQUENTIAL SHORT-TERM MEMORY A68-81973

COORDINATION OF MOVEMENTS OF EYES AND HAND IN VARIOUS MOTOR TASKS A68-81978

MECHANISMS OF ATTENTION TO BOTH AUDITORY AND VISUAL STIMULI IN HUMANS A68-81985

EFFECT OF STIMULUS REPETITIONS AND ALTERATIONS ON ONE-FINGER AND TWO-FINGER RESPONDING IN TWO-CHOICE REACTION TIME TO VISUAL STIMULI IN HUMANS A68-81992

EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING AS AFFECTED BY OPTIC STIMULI A68-81993

VISUAL TASKS
EVALUATION OF THREE APPROACHES TO FIGURAL ORGANIZATION USING PAIRED-ASSOCIATES DISCRIMINATION-LEARNING TASK VARYING IN COMPLEXITY A68-81819

COMPENSATION FOR DISPLACED VISION AND INTERSENSORY CONFLICT AS FACTOR IN ADAPTATION N68-32259

VOICE COMMUNICATION
HELIUM-OXYGEN MIXTURE BREATHING EFFECTS ON VOCAL FREQUENCY AND AMPLITUDE, NOTING SUBSTANTIAL QUALITY DETERIORATION OF COMMUNICATIONS A68-38287

VOMITING
IRRITATION CUMULATION DURING MOTION SICKNESS BY VOMITORY CENTER A68-38227

VOSKHOD MANNED SPACECRAFT
BIOLOGICAL EXPERIMENTS CONDUCTED ON VOSKHOD SPACECRAFT SHOWING SMALL DISTURBANCES IN DIFFERENT BIOLOGICAL OBJECTS HEREDITARY STRUCTURES A68-38214

VOSTOK SPACECRAFT
PHYSIOLOGICAL AND HYGIENIC REQUIREMENT OF LIFE SUPPORT SYSTEMS OF VOSTOK AND VOSKHOD SPACE SHIPS A68-38282

W

WAKEFULNESS
EFFECTS OF AMPHETAMINE ON SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS A68-81916

CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

PSYCHOLOGIC AND PHYSIOLOGIC RESPONSES OF PSYCHIATRIC PATIENTS AND NORMALS DURING FIFTY HOURS OF WAKEFULNESS A68-81997

WARNING SYSTEMS
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY A68-81955

WASTE DISPOSAL
CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

WASTES
CHANGE OF SALT CONCENTRATION OF INFLOWING WASTE AFFECTING YIELD OF BIOLOGICAL SOLIDS AND ABILITY OF CONTINUOUS CULTURED MICROBES TO REMOVE SUBSTRATE A68-81924

WATER
ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE A68-81884

WATER RECLAMATION
ARTIFICIAL WATER REGENERATION CYCLES FOR WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS A68-38308

CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

LIFE SUPPORT SYSTEM DESIGN, CONSIDERING LONG MANNED SPACE MISSIONS AND REGENERATIVE SUBSYSTEMS FOR WATER AND OXYGEN RECOVERY A68-38507

DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT NASA-CR-66637 N68-31243

WATER VAPOR
AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT NASA-CR-66637 N68-31243

WAVEFORMS
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING NASA-TN-D-4751 N68-32100

WEIGHT MASS
COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS JPRS-46173 N68-32901

WEIGHTLESSNESS
LABYRINTHINE FUNCTIONALITY IN ASTRONAUTS, CONSIDERING WEIGHTLESSNESS EFFECTS A68-37238

CONTINUOUSLY VARYING GRAVITATIONAL FIELD FOR STUDYING WEIGHTLESSNESS EFFECTS ON GROWTH AND DEVELOPMENT OF CREEPER PLANT A68-37242

GAMMA RADIATION EXPOSURE AND WEIGHTLESSNESS EFFECTS COMPARED FOR BIOLOGICAL MATERIAL DURING BIOSATELLE 2 FLIGHT AND IN EARTH CONTROL CAPSULE, NOTING RADIATION SOURCES A68-37453

SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

MATHEMATICAL SIMULATION METHODS TO STUDY CARDIOVASCULAR SYSTEM CONTROL FUNCTION UNDER EARTH BASED AND WEIGHTLESSNESS CONDITIONS A68-38219

EFFERENT IMPULSATION OF VAGUS OF RABBITS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS A68-38225

MATHEMATICAL MODEL OF OTOCONIA TO STUDY VESTIBULAR ANALYSOR UNDER WEIGHTLESSNESS A68-38228

WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA

PALUDOSA MICROSPORES A68-38248

OPTICAL ILLUSIONS ASSOCIATED WITH WEIGHTLESSNESS ATTRIBUTED TO INVERSE AFFERENTATION INFLUENCE WHICH SIGNALS CHANGES IN OCULOMOTOR APPARATUS A68-38280

OPTICAL ILLUSIONS OF SUBJECTS UNDER WEIGHTLESSNESS COMBINED WITH ANGULAR AND CORIOLIS ACCELERATIONS A68-38281

WEIGHTLESSNESS EFFECT ON FERTILIZED FROG EGG *ABILITY TO DIVIDE, DIFFERENTIATE AND DEVELOP* NORMALLY A68-39268

METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE NASA-CR-96450 N68-33333

WEIGHTLESSNESS SIMULATION
WEIGHTLESSNESS SIMULATION AND STUDIES OF EFFECTS ON MICROORGANISMS, ALGAE, AND INSECTS N68-32142

WIND EFFECTS
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE A68-38221

WORDS (LANGUAGE)
DIURNAL VARIATIONS OF MUSCLE ACTION POTENTIALS AND WORD ASSOCIATIONS RELATED TO PSYCHOLOGICAL ORIENTATION A68-81996

WORK-REST CYCLE
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

X

X RAY ANALYSIS
X RAY EFFECTS ON PHOSPHOLIPIDE AND PRESSURES
NASA-CR-96228 N68-32427

X RAY IRRADIATION
SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

BIOLOGICAL EFFECTS OF X RAY IRRADIATION ON MICROCOCCUS DENITRIFICANS N68-32136

HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS N68-32147

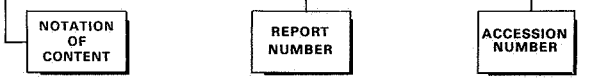
DOSIMETER FOR MEASURING INTENSITY OF DOSE OF X RAY OR GAMMA RAYS OR BOTH USING SEMICONDUCTOR MATERIAL
NASA-TT-F-11906 N68-32747

COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE N68-33288

Corporate Source Index

Typical Corporate Source Index Listing

AEROSPACE MEDICAL DIV. AEROSPACE MEDICAL RESEARCH LABS. /6570TH/, WRIGHT-PATTERSON AFB, OHIO.
VISUAL FIXATION AND UNCERTAINTY EFFECTS ON HUMAN REACTION TIME AT CONTROL PANEL
AMRL-TR-65-149 N68-21110



A Notation of Content, rather than the title of the document, appears under each corporate source. The accession number is located beneath and to the right of the Notation of Content, e.g., N68-12345. Under any one corporate source, the accession numbers are arranged in sequence.

A

AEROSPACE MEDICAL DIV. AEROSPACE MEDICAL RESEARCH LABS. /6570TH/, WRIGHT-PATTERSON AFB, OHIO.
HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY
AMRL-TR-67-119 N68-31190

SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

AIR FORCE EUROPEAN CENTRAL AEROMEDICAL SERVICES, WIESBADEN /WEST GERMANY/.
PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS
N68-32154

AIR FORCE SYSTEMS COMMAND, WRIGHT-PATTERSON AFB, OHIO.
EXPERIMENTAL MODELS OF RADIOELECTRONIC EQUIPMENT FOR TEMPORAL MEASUREMENTS OF HUMAN REFLEXES
FTD-MT-66-133 N68-31303

VISUAL PERCEPTION AND IMAGE IDENTIFICATION BY READING MACHINES
FTD-MT-66-158 N68-31496

PHYSIOLOGICAL MECHANISMS FOR SELF-REGULATION OF HIGHER NERVOUS ACTIVITY IN ANIMALS AND MAN
FTD-HT-23-808-67 N68-32030

EFFECTS OF VIBRATION AND GAMMA, IONIZING, OR X RAY RADIATION ON GUINEA PIGS AND MICE
FTD-MT-24-142-67 N68-33285

COMBINED EFFECTS OF VIBRATION AND GAMMA RADIATION ON VESTIBULAR APPARATUS OF GUINEA PIGS
N68-33286

COMBINED EFFECTS OF VIBRATION AND IONIZING RADIATION ON FUNCTIONAL STATE OF SPINAL REFLEX ARC OF GUINEA PIGS N68-33287

COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE N68-33288

AIR PROVING GROUND CENTER, EGLIN AFB, FLA.
SAFETY MANUAL FOR PERSONNEL USING NEODYMIUM LASERS
APGC-TR-68-53 N68-32994

ALABAMA AGRICULTURAL AND MECHANICAL COLL., NORMAL.
X RAY EFFECTS ON PHOSPHOLIPIDE AND PRESSURES
NASA-CR-96228 N68-32427

AMERICAN INST. OF BIOLOGICAL SCIENCES, WASHINGTON, D. C.
BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767 N68-31737

ANTIOCH COLL., YELLOW SPRINGS, OHIO.
ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203 N68-31454

ARBEITSGRUPPE BIOPHYSIKALISCHE RAUMFORSCHUNG, FRANKFURT AM MAIN /WEST GERMANY/.
ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE N68-32133

ULTRAHIGH VACUUM CHAMBER DESIGN AND EXPERIMENTS TO DETERMINE BIOLOGICAL EFFECTS ON BACTERIA
N68-32138

ARIZONA STATE UNIV., TEMPE.
FEASIBILITY STUDY TO ESTABLISH NATIONAL PROGRAM FOR TRAINING SKILLED AVIATION PERSONNEL
PB-178076 N68-31686

AZTEC SCHOOL OF LANGUAGES, INC., ACTON, MASS.
HISTOLOGICAL DISTRIBUTION AND RETENTION OF LEAD, RADIOACTIVE SULFUR, AND RADIOACTIVE CALCIUM IN NEW COMPACT BONE SUBSTANCE
NASA-TT-F-11862 N68-31591

B

BATTELLE MEMORIAL INST., RICHLAND, WASH.
CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS
BNWL-SA-1569 N68-33498

BATTELLE-NORTHWEST, RICHLAND, WASH.
HIT THEORY AND MICRODOSIMETRY APPLIED TO RELATIVE BIOLOGICAL EFFECTIVENESS PROBLEM
BNWL-SA-1753 N68-31666

TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETER CHARACTERISTICS
BNWL-741 N68-32943

BAYLOR UNIV., HOUSTON, TEX.
BIOLOGICAL QUARANTINE PROTOCOL FOR SAFE HANDLING AND STUDY OF LUNAR SAMPLE IN RECEIVING LABORATORY FOR INFECTIOUS OR TOXIC PROPERTIES
NASA-CR-92209 N68-31008

BELL AEROSYSTEMS CO., BUFFALO, N. Y.
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089 N68-31363

BIOTECHNOLOGY, INC., ARLINGTON, VA.
HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

BOEING CO., PHILADELPHIA, PA.
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

BOLT, BERANEK, AND NEWMAN, INC., CAMBRIDGE, MASS.
PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687 N68-31891

MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

BONN UNIV. /WEST GERMANY/.
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS
N68-32146

BRANDEIS UNIV., WALTHAM, MASS.
COMPENSATION FOR DISPLACED VISION AND INTERSENSORY CONFLICT AS FACTOR IN ADAPTATION
N68-32259

BROOKHAVEN NATIONAL LAB., UPTON, N. Y.
FISSION NEUTRON SOURCES AND DOSIMETRY IN TISSUE EQUIVALENT PHANTOM - CALIFORNIUM 252
BNL-12452 N68-31645

BUNKER-RAMO CORP., CANOGA PARK, CALIF.
SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

C

CALIFORNIA UNIV., LOS ANGELES.
CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43 N68-31734

SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY N68-32573

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE, PARIS /FRANCE/.
HUMAN REACTIONS TO ACOUSTIC SIGNAL TRANSMISSION TO EARDRUM N68-30948

CHEMICAL LAB. RVO-TNO, RIJSWIJK /NETHERLANDS/.
LITERATURE SURVEY OF AIR REGENERATION IN SEALED ENVIRONMENTS
TDCK-50963 N68-32451

CHILDRENS HOSPITAL MEDICAL CENTER OF NORTHERN CALIF., OAKLAND.
DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

CORNELL AERONAUTICAL LAB., INC., BUFFALO, N. Y.
SIDE TO SIDE HEAD VIBRATION EFFECTS ON VISUAL ACUITY MEASUREMENTS
NASA-CR-96466 N68-33093

D

DEUTSCHE VERSUCHSANSTALT FUR LUFT- UND RAUMFAHRT, BAD GODESBERG /WEST GERMANY/.
WEIGHTLESSNESS SIMULATION AND STUDIES OF EFFECTS ON MICROORGANISMS, ALGAE, AND INSECTS
N68-32142

F

FEDERAL AVIATION ADMINISTRATION, OKLAHOMA CITY, OKLA.
STIMULUS SIZE AND VIEWING DISTANCE EFFECTS ON DURATION OF ILLUSORY MOTION IN SPIRAL AFTEREFFECT
FAA-AM-68-10 N68-32920

CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, WASHINGTON, D. C.
ELECTRIC STIMULI OF DOGS TO STUDY FUNCTIONAL STRUCTURE OF TEMPORARY CONNECTION IN AVOIDANCE REACTIONS
NS-59 N68-31791

FRAUNHOFER-GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG E. V., DARMSTADT /WEST GERMANY/.
CRITICAL ANALYSIS OF PANSPERMIA THEORY IN VIEW OF RECENT SPACE FLIGHT DEVELOPMENTS
N68-32139

G

GENERAL DYNAMICS/CONVAIR, SAN DIEGO, CALIF.
SINUSOIDAL MOTION EFFECTS ON CREW PERFORMANCE DURING SPACE FLIGHT
NASA-CR-92211 N68-31101

FEASIBILITY AND DESIGN CONFIGURATION OF ORBITAL ONBOARD CENTRIFUGE FOR HUMAN PHYSIOLOGICAL EXPERIMENTS DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66649 N68-33296

SYSTEMS AND TEST SPECIFICATIONS FOR DEVELOPING SPACE RESEARCH HUMAN CENTRIFUGE ENGINEERING PROTOTYPE FOR APOLLO APPLICATIONS PROGRAM ORBITAL ONBOARD EXPERIMENT
NASA-CR-66650 N68-33297

EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

GEORGE WASHINGTON UNIV., ALEXANDRIA, VA.
HUMAN FACTORS AND MANS ROLE IN MAN MACHINE SYSTEMS APPLIED TO ALLOCATIVE DECISION MAKING
AD-671128 N68-31149

PROBLEMS AND METHODS OF LEARNING AND TRAINING
AD-671060 N68-31583

GOTTINGEN UNIV. /WEST GERMANY/.
GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS
N68-32140

HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS N68-32141

H

HAMBURG UNIV. /WEST GERMANY/.
BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS
N68-32134

HAMILTON STANDARD DIV., UNITED AIRCRAFT CORP., WINDSOR LOCKS, CONN.
DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT
NASA-CR-66637 N68-31243

HOUSTON ENGINEERING RESEARCH CORP., TEX.
MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING RESPONSES
ARL-TR-68-4 N68-32814

I

INDIANA UNIV., BLOOMINGTON.
COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE
TR-25 N68-31335

INSTITUTE FOR PERCEPTION RVO-TNO, SOESTERBERG /NETHERLANDS/.
EXPERIMENTAL STUDY OF TIME PERCEPTION DURING INFORMATION PROCESSING WITH SHORT INTERVALS
IZF-1968-10 N68-32407

J

JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO.
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

JET PROPULSION LAB., CALIF. INST. OF TECH., PASADENA.
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

JOHANN-WOLFGANG-GOETHE-UNIVERSITAT, FRANKFURT AM MAIN /WEST GERMANY/.
CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMWF-FB-W-68-30 N68-32131

SCOPE AND PROBLEMS OF READYING EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT FOR LAUNCH AND FLIGHT
N68-32137

EXPERIMENTAL STUDY OF BIOLOGICAL PRINCIPLE OF RHYTHMIC DEOXYRIBONUCLEIC ACID SYNTHESIS
N68-32152

JOHN B. PIERCE FOUNDATION OF CONNECTICUT, NEW HAVEN.
EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

JOHNS HOPKINS UNIV., BALTIMORE, MD.
METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE
NASA-CR-96450 N68-33333

JOINT PUBLICATIONS RESEARCH SERVICE, WASHINGTON, D. C.
FOOD RATIONS FOR ASTRONAUTS ON LONG DURATION SPACE FLIGHTS
JPRS-46002 N68-31511

COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS
JPRS-46173 N68-32901

CULTIVATING PLANTS FOR CLOSED ECOLOGICAL SYSTEMS DURING LONG MANNED SPACE FLIGHTS
JPRS-46306 N68-33269

K

KERNFORSCHUNGSANLAGE, JUELICH /WEST GERMANY/.
BIOLOGICAL EFFECTS OF X RAY IRRADIATION ON MICROCOCCUS DENITRIFICANS N68-32136

L

LIBRARY OF CONGRESS, WASHINGTON, D. C.
SOVIET PROBLEMS IN EDUCATION AND TRAINING, GROUP DYNAMICS, OPERATOR PERFORMANCE, TEACHING MACHINES, AND PSYCHOMETRICS
ATD-68-34-108-2 N68-31447

SUMMARY INFORMATION ON SOVIET RESEARCH IN TELEPATHY AND APPLICATION OF COMMUNICATION THEORY TECHNIQUES TO TELEPATHIC COMMUNICATION
N68-32034

METHODS AND RESULTS OF EARLY AND RECENT SOVIET THEORETICAL AND EXPERIMENTAL RESEARCH IN TELEPATHY N68-32035

ANALYSIS OF SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION BASED ON FRAMEWORK OF INFORMATION AND COMMUNICATION THEORIES N68-32036

LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS
ATD-68-105-108-9 N68-33037

LINDE CO., TONAWANDA, N. Y.
TONAWANDA 2 MODEL OF INERT GAS TRANSPORT FOR PREDICTING INCIDENCE OF DECOMPRESSION SICKNESS IN FLIGHT PROFILES
NASA-CR-92212 N68-31215

LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, ALBUQUERQUE, N. MEX.
LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064 N68-32659

M

MASSACHUSETTS INST. OF TECH., CAMBRIDGE.
HUMAN LEARNING BEHAVIOR THEORY IN MANUAL CONTROL TASK MODELED AS COMPUTER PROGRAM
NASA-CR-1124 N68-31911

HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY
NASA-CR-96290 N68-33241

MAX-PLANCK-INSTITUT FUR BIOPHYSIK, FRANKFURT AM MAIN /WEST GERMANY/.
ULTRAVIOLET MERCURY RADIATION SOURCE DESIGNED FOR BIOLOGICAL SIMULATION EXPERIMENTS
N68-32143

THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS
N68-32147

MAX-PLANCK-INSTITUT FUR VERHALTENSPHYSIOLOGIE, SEEWIESEN UBER STARNBERG /WEST GERMANY/.
INSULATED-LABORATORY TESTS OF EFFECTS OF WEAK TERRESTRIAL ELECTROMAGNETIC RADIATION ON CIRCADIAN PERIODICITY OF MAN N68-32150

INTER AND INTRA-INDIVIDUAL DESYNCHRONIZATION AND BEHAVIOR STUDIED IN ISOLATED GROUP EXPERIMENT
N68-32151

MINNESOTA UNIV., MINNEAPOLIS.
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT
NASA-CR-92220 N68-32973

N

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. AMES RESEARCH CENTER, MOFFETT FIELD, CALIF.
THEORY AND EXPERIMENTAL PROGRAM IN SUPPORT OF CHEMICAL APPROACH TO LIFE ORIGIN AND EVOLUTION
N68-32144

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. FLIGHT RESEARCH CENTER, EDWARDS, CALIF.
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751 N68-32100

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. LANGLEY RESEARCH CENTER, LANGLEY STATION, VA.
STUDIES REVIEW OF PILOT PROBLEMS FOR ONE MAN FLYING UNITS IN SIMULATED LUNAR GRAVITY
NASA-TM-X-61164 N68-33437

SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON, D. C.
N ASA PROGRAM OUTLINE ON RESEARCH AND DEVELOPMENT RELATED TO BIOLOGICAL SPACE EXPLORATION
N68-32132

ANNOTATED BIBLIOGRAPHY AND INDEXES ON AEROSPACE MEDICINE AND BIOLOGICAL EFFECTS - JULY 1968
NASA-SP-7011/52/ N68-32707

NATIONAL LENDING LIBRARY FOR SCIENCE AND TECHNOLOGY, BOSTON SPA /ENGLAND/.
PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF PORPHIN SERIES
RTS-4318 N68-32429

PSYCHOLOGICAL FACTORS IN THINKING DIRECTION DURING PROBLEM SOLVING
RTS-4098 N68-32506

MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

CLOSED PROCESSES OF CONTROL AND AUTOREGULATION IN COMPLICATED BIOLOGICAL SYSTEMS
RTS-4420 N68-32581

HUMAN REACTIONS AND ORGANIZING ACTIVITY IN TIME PERCEPTION FOLLOWING EXPOSURE TO LIGHT SIGNALS
RTS-4099 N68-32582

REVIEW OF LITERATURE ON STRUCTURE OF CELL MEMBRANES
RTS-4481 N68-32664

EFFECTS OF DIET VARIATION ON SECRETORY FUNCTION OF SMALL INTESTINE
RTS-4530 N68-32764

NAVAL PERSONNEL RESEARCH ACTIVITY, SAN DIEGO, CALIF.
AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES
NPRA-STB-68-10 N68-31387

NAVAL SCHOOL OF AVIATION MEDICINE, PENSACOLA, FLA.
AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122 N68-31459

PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES
NASA-CR-96199 N68-32424

ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

TRIAXIAL MULTIPLE CHANNEL ACCELEROMETER MODULE FOR VESTIBULAR STIMULATION MEASUREMENTS IN AIRCRAFT
NASA-CR-96298 N68-32734

NAVAL SUBMARINE MEDICAL CENTER, GROTON, CONN.
RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM
SMRL-519 N68-31382

MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION
SMRL-509 N68-31925

NEW MEXICO STATE UNIV., UNIVERSITY PARK.
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

NORTH AMERICAN ROCKWELL CORP., DOWNEY, CALIF.
CHARACTERISTICS, CONSTRAINTS, AND IMPLICATIONS OF LONG DURATION SPACE MISSIONS BASED ON USE OF AVAILABLE HARDWARE AND MAINTENANCE/REPAIR ACTIONS IN SPACE
NASA-CR-73239 N68-32163

O

OHIO STATE UNIV., COLUMBUS.
INFORMATION LOSS IN VISUAL PREPERCEPTUAL SYSTEM
N68-32309

OREGON STATE UNIV., CORVALLIS.
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

P

PASADENA FOUNDATION FOR MEDICAL RESEARCH, CALIF.
RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34 N68-32088

PHILIPPS-UNIVERSITAT, MARBURG /WEST GERMANY/.
CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMWF-FB-W-68-30 N68-32131

THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE
N68-32135

CONTINUOUS METHODS FOR CONTROLLING OXYGEN SUPPLY OF HUMAN BODY N68-32148

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM
N68-32149

REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE
N68-32153

PURDUE UNIV., LAFAYETTE, IND.
EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING
TR-12 N68-31881

R

RESEARCH TRIANGLE INST., DURHAM, N. C.
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

RHODE ISLAND UNIV., KINGSTON.
HEAT AND MASS FLOW RATE THROUGH SEVERAL TYPES OF COMPOSITE CLOTHING UNDER SIMULATED CONDITIONS
TR-68-44-CM N68-32519

ROCKFORD RESEARCH INST., INC., CAMBRIDGE, MASS.
INDUCTIVE INFERENCE RESEARCH
RTB-155 N68-32078

ROYAL AIRCRAFT ESTABLISHMENT, FARNBOROUGH /ENGLAND/.
ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN
RAE-LIB-TRANS-1298 N68-31916

S

SANDIA CORP., ALBUQUERQUE, N. MEX.
TERRESTRIAL MICROORGANISMS DEPOSITED ON MOON BY UNMANNED LUNAR PROBES
NASA-CR-96121 N68-31501

SCHOOL OF AEROSPACE MEDICINE, BROOKS AFB, TEX.
RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN
SAM-TR-68-33 N68-31396

AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

RETINAL FLUORESCENCE ANGIOGRAPHY
SAM-TR-68-21 N68-32995

STANFORD RESEARCH INST., MENLO PARK, CALIF.
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193 N68-33005

SYSTEM DEVELOPMENT CORP., DAYTON, OHIO.
VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

SYSTEMS RESEARCH LABS., INC., SAN ANTONIO, TEX.
CARDIOVASCULAR DECONDITIONING AFTER SPACE TUMBLING
SAM-TR-68-32 N68-32800

T

TASK GROUP DELTA, NORFOLK, VA.
SUMMARY INFORMATION AND COMPARISON OF CURRENT AND FUTURE AIRCREW TRAINING PROGRAMS
DELTA-22 N68-31875

TECHTRAN CORP., GLEN BURNIE, MD.
DOSIMETER FOR MEASURING INTENSITY OF DOSE OF X RAY OR GAMMA RAYS OR BOTH USING SEMICONDUCTOR MATERIAL
NASA-TT-F-11906 N68-32747

TEXAS UNIV., AUSTIN.
COMPARISON OF INSECTS FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT ANGELS
P-14 N68-31442

U

UNIVERSIDAD PERUANA DE CIENCIAS MEDICAS Y BIOLOGICAS, LIMA /PERU/.
PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA
AR-2 N68-30963

TESTOSTERONE PRODUCTION AND HORMONE METABOLISM OF MEN IN HIGH ALTITUDE ENVIRONMENTS
AR-2 N68-31059

V

VIRGINIA POLYTECHNIC INST., BLACKSBURG.
SOLVING EQUATIONS OF MOTION TO OBTAIN RELATIONSHIP BETWEEN RANDOM CREW MOTIONS AND ANGULAR CHANGE IN SPACECRAFT ORIENTATION N68-32043

W

WASHINGTON UNIV., SEATTLE.
RESPONSES OF HUMAN SUBJECTS TO ACUTE COLD EXPOSURE RELATED TO METABOLISM N68-32256

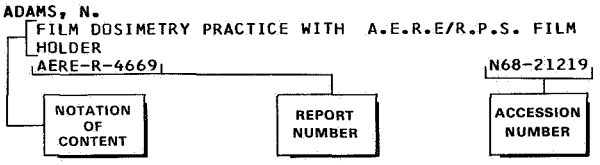
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION
N68-33479

WOODS HOLE OCEANOGRAPHIC INSTITUTION, MASS.
CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS
NASA-CR-96453 N68-33555

Personal Author Index

AEROSPACE MEDICINE AND BIOLOGY / *a continuing bibliography* NOVEMBER 1968

Typical Personal Author Index Listing



A Notation of Content, rather than the title of the document, appears under each author's name. The accession number is located beneath and to the right of the Notation of Content, e.g., N68-12345. Under any one author's name, the accession numbers are arranged in sequence.

A

AARONS, L.
DIURNAL VARIATIONS OF MUSCLE ACTION POTENTIALS AND WORD ASSOCIATIONS RELATED TO PSYCHOLOGICAL ORIENTATION A68-81996

ABATUROVA, E. A.
BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

ABRAHAM, S.
DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

ABRAMSON, E. A.
ACUTE ANTILIPOLYTIC EFFECTS OF ETHYL ALCOHOL AND ACETATE IN HUMAN BEINGS A68-81932

ABROMOVICH, K. G.
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

ACKERS, J. G.
BODY COMPOSITION CHANGES IN OBESE HUMANS DURING INTERMITTENT STARVATION A68-81846

ADAMOV, R. V.
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

ADEY, W. R.
ELECTRODE PROBLEMS IN RECORDING SKIN RESPONSES IN FREELY MOVING SUBJECTS NOTING IMPLANTATION, ELECTROMECHANICAL AND RADIO SIGNAL INTERFERENCE A68-38517

AFANASEV, IU. I.
LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

AGADZHANIAN, N. A.
WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR A68-38283

ALBRECHT, G. J.
INFLUENCE OF VITAMIN D THREE ON THYROCALCITONIN ACTIVITY IN THYROID GLAND OF RATS A68-82005

ALEKSANDROVA, I. V.
PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH A68-38321

ALESHIN, V. V.
EFFERENT IMPULSATION OF VAGUS OF RABBITS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS A68-38225

ALEXANDER, M.
ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203 N68-31454

ALLEN, J. N.
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

ALTEKRUSE, J. M.
EFFECT OF EXERCISE ON PREVENTION AND THERAPY OF CORONARY HEART DISEASE A68-81828

AMENDT, R.
TELEMETRIC MEASURING METHODS IN AEROSPACE MEDICINE A68-37189

AMMANN, E. C. B.
PROBLEMS ASSOCIATED WITH DETERMINATION OF CARBON DIOXIDE BY INFRARED ABSORPTION A68-81863

ANDERSON, N. H.
AVERAGING OF SPACE AND NUMBER STIMULI WITH SIMULTANEOUS PRESENTATION A68-81965

ANDO, A.
RADIOLOGICAL CONTAMINATION DETECTED DURING CIVILIAN AIRCRAFT FLIGHTS A68-37241

ANIKEEVA, I. D.
GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

ANTIPOV, V. V.
BIOLOGICAL EXPERIMENTS CONDUCTED ON VOSKHOD SPACECRAFT SHOWING SMALL DISTURBANCES IN DIFFERENT BIOLOGICAL OBJECTS HEREDITARY STRUCTURES A68-38214

BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION A68-38249

IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF

WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

ANTONE, E. J.
EFFECT OF ISOMETRIC-ISOTONIC TRAINING ON SHOT PUT DISTANCE AND MAXIMUM ISOMETRIC STRENGTH IN ATHLETES A68-81925

ANTONENKO, L. I.
HEMODYNAMIC DISTURBANCES OCCURRING DURING EXPERIMENTAL PULMONARY EMBOLISM IN CATS AND DOGS UNDER HYPOTHERMIC CONDITIONS AND USE OF GANGLION BLOCKERS A68-81882

APANASENKO, Z. I.
COMBINED EFFECTS OF VIBRATION AND GAMMA RADIATION ON VESTIBULAR APPARATUS OF GUINEA PIGS N68-33286

APPENZELLER, O.
DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF NERVOUS SYSTEM A68-81937

APRIDONIDZE, V. G.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

ARAGONES, J. M.
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

ARKHIPOVA, O. G.
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE A68-81891

ARKY, R. A.
ACUTE ANTILIPOLYTIC EFFECTS OF ETHYL ALCOHOL AND ACETATE IN HUMAN BEINGS A68-81932

ARNOTT, W. M.
DESIGN OF AIR PASSAGES RELATED TO GAS MOVEMENT IN ALVEOLAR VENTILATION A68-81915

ARUTIUNOV, G. A.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

ASIAMOLOVA, N. M.
ELECTROENCEPHALOGRAM CLASSIFICATION REGARDING PILOT SELECTION A68-38264

ATTINGER, E. O.
PARAMETRIC PERFORMANCE ANALYSIS OF OXYGEN TRANSPORT SYSTEM A68-81958

AUCHINCLOSS, J. H., JR.
UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE USING ANALYTICAL CIRCUITS AND ANALOG COMPUTER A68-81860

AUFFRET, R.
CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

AVERIANOV, V. A.
ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE A68-81884

AZUMA, S. A.
ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

B

BACKLUND, L.
NEW METHOD FOR TESTING ISOMETRIC MUSCLE STRENGTH OF HUMANS UNDER STANDARDIZED CONDITIONS A68-81893

BADDELEY, A. D.
PRIOR RECALL OF NEWLY LEARNED ITEMS AND RECENCY EFFECT IN FREE RECALL A68-81900

BAIKOV, A. E.
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

BAKER, C. H.
MANUAL GUIDANCE IN LEARNING PURSUIT TRACKING TASK A68-81903

BAKER, R. A.
EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER A68-81822

BALDWIN, R. O.
AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES
NPRA-STB-68-10 N68-31387

BALONOV, L. IA.
PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

BANCROFT, R. W.
PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM A68-81854

BANERJEE, M.
MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS A68-81856

BANKS, R.
PSYCHOLOGIC AND PHYSIOLOGIC RESPONSES OF PSYCHIATRIC PATIENTS AND NORMALS DURING FIFTY HOURS OF WAKEFULNESS A68-81997

BARBASHOVA, Z. I.
ERYTHROCYTE OSMOTIC RESISTIVITY CHANGES DURING HIGH MOUNTAIN ACCLIMATIZATION OF MOUNTAIN CLIMBERS AND ATHLETES A68-38294

BARDACH, J. E.
BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767 N68-31737

BARER, A. S.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE A68-38220

BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

BARNEBEY, S. F.
SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

BARON, S.
MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

BARRETT, G. V.
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR A68-81949

BARUTKINA, T. S.
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE

RATS A68-38301

BAULE, G. H.
UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE USING ANALYTICAL CIRCUITS AND ANALOG COMPUTER A68-81860

BAULINA, E. N.
GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

BEERY, R. G.
NEGATIVE CONTRAST EFFECT OF REWARD DELAY IN DIFFERENTIAL CONDITIONING IN RATS A68-81967

BELAI, V. E.
CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS A68-38218

BENCHIMOL, A.
TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

BENNETT, E. O.
OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

BENNETT, M. J.
DIETARY EFFECTS ON TOTAL FATTY ACID CONTENT IN RATS, AND CHANGES IN LIVER, ADIPOSE TISSUE, AND CARBOHYDRATE METABOLISM
NASA-CR-96422 N68-33506

BENNETT, T. L.
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS A68-81971

BENSON, A. J.
EFFECTS OF L-HYOSCINE HYDROBROMIDE ON POST ROTARY SENSATION AND NYSTAGMUS IN HUMANS A68-81926

BEREGOVKIN, A. V.
INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING A68-38297

BEREZHNAIA, E. K.
COORDINATION OF MOVEMENTS OF EYES AND HAND IN VARIOUS MOTOR TASKS A68-81978

BERGER, R. J.
HORIZONTAL ELECTROOCULOGRAPHIC POTENTIAL OPERANT CONDITIONING OF EYE MOVEMENT IN MONKEYS / MACACA NEMESTRINA/ A68-38659

BERITIC, T.
LEAD CONCENTRATIONS IN CEREBROSPINAL FLUID IN PATIENTS EXPOSED TO LEAD POISONING FROM SOURCES INCLUDING TETRAETHYL LEAD A68-81878

BERTHEAU, J.-M.
CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

BERTHOZ, A.
CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

BIARD, L.
FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS A68-82014

BIRKENHAGER, J. C.
BODY COMPOSITION CHANGES IN OBESE HUMANS DURING INTERMITTENT STARVATION A68-81846

BIZIN, IU. P.
WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR A68-38283

BIZZI, E.
DISCHARGE OF FRONTAL EYE FIELD NEURONS DURING SACCADIC AND FOLLOWING EYE MOVEMENTS IN UNANESTHETIZED MONKEYS A68-81914

BLOMQVIST, G.
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

BODINE, E.
PROTECTIVE ARMOR AGAINST BULLETS FOR FLYING PERSONNEL A68-81815

BODSER, YA. O.
EXPERIMENTAL MODELS OF RADIOELECTRONIC EQUIPMENT FOR TEMPORAL MEASUREMENTS OF HUMAN REFLEXES
FTD-MT-66-133 N68-31303

BOGINA, I. D.
TIME CHARACTERISTICS OF FINGER MOTIONS OF EACH HAND WHEN TEST SUBJECTS CHOSE RATES OF MOTION A68-38275

BOKOVAIA, M. M.
AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

BOLLEN, W. B.
SYSTEMATIC DESCRIPTION AND KEY TO ACTINOMYCETES AND BACILLUS ISOLANTS FROM MEXICAN SOILS
NASA-CR-96135 N68-31842

STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

BOLONDINSKII, V. K.
COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

BONFITTO, M.
ELECTROPHYSIOLOGICAL STUDY OF CONDITIONED REACTIONS TO TIME IN HUMANS A68-81981

BORNSCHEIN, H.
ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN
RAE-LIB-TRANS-1298 N68-31916

BOROFKA, R. P.
SCENE POLARIZATION MEASUREMENTS BY PHOTOGRAPHIC PHOTOMETRY N68-32573

BOROVYAGIN, V. L.
REVIEW OF LITERATURE ON STRUCTURE OF CELL MEMBRANES
RTS-4481 N68-32664

BORSHCHENKO, V. V.
CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

BOSCO, J. S.
EFFECT OF ISOMETRIC-ISOTONIC TRAINING ON SHOT PUT DISTANCE AND MAXIMUM ISOMETRIC STRENGTH IN ATHLETES A68-81925

BOULANGE, M.
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS A68-82008

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

BOUTELIER, C.
RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

BOUTELIER, CH.
PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

BOWEN, I. G.
LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064 N68-32659

BRAINES, S. N.
MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

CLOSED PROCESSES OF CONTROL AND AUTOREGULATION IN COMPLICATED BIOLOGICAL SYSTEMS
RTS-4420 N68-32581

BRAND, J. J.
EFFECTS OF L-HYOSCINE HYDROBROMIDE ON POST ROTARY SENSATION AND NYSTAGMUS IN HUMANS A68-81926

EFFECT OF REPETITION ON MEASUREMENTS OF POST-ROTATIONAL TURNING SENSATION AND NYSTAGMUS IN HUMANS AFTER DECELERATION FROM CONSTANT ANGULAR VELOCITIES A68-81927

BRAZIER, M. A. B.
SUBCORTICAL AND CORTICAL ELECTROENCEPHALOGRAPHIC CORRELATION IN MAN - COMPUTER STUDY A68-81885

BRECHER, G.
INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

BRENGELMANN, G. L.
RESPONSES OF HUMAN SUBJECTS TO ACUTE COLD EXPOSURE RELATED TO METABOLISM N68-32256

BRESLAV, I. S.
HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE A68-38285

HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY A68-38295

BRIEGLEB, W.
WEIGHTLESSNESS SIMULATION AND STUDIES OF EFFECTS ON MICROORGANISMS, ALGAE, AND INSECTS N68-32142

BRIGGS, A. P.
OPTIONAL SCHEME FOR ERYTHROCYTE MECHANISMS IN CARBON DIOXIDE TRANSPORT A68-81849

BRITTIN, G. M.
INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

BROWN, C. A.
AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

BROWN, H.
HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION A68-81844

BROWN, H. E.
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

BROWN, K. T.
COMPONENTS AND ORIGINS OF MAMMALIAN ELECTRORETINOGRAM - REVIEW A68-81834

BROWN, W. K.
AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

BRUCKNER-KARDOSS, E.
LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS A68-81906

BRYCE, A. J.
BIOLOGICAL CLEANABILITY OF SPACECRAFT SURFACES INVESTIGATED BY RADIOISOTOPE TRACER TECHNIQUES A68-38090

BUCHANAN, H.
RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN
SAM-TR-68-33 N68-31396

BUECKER, H.
CONFERENCE PAPERS ON EXTRATERRESTRIAL BIOPHYSICS, BIOLOGY, BIOASTRONAUTICS, AND AEROSPACE MEDICINE
BMWF-FB-W-68-30 N68-32131

ACUTE AND CHRONIC RADIATION HAZARDS FOR MAN IN EXTRATERRESTRIAL SPACE N68-32133

ULTRAHIGH VACUUM CHAMBER DESIGN AND EXPERIMENTS TO DETERMINE BIOLOGICAL EFFECTS ON BACTERIA N68-32138

BUIANOV, P. V.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING A68-38297

BULLARD, R. W.
MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS A68-81856

BURCHULADZE, A. D.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

BURNS, B. D.
CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

BURR, M. J.
CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

BURROWS, A. A.
IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION A68-81951

BYCHKOV, V. P.
CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS A68-38305

C

CADZOW, J. A.
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089 N68-31363

CAIN, S. M.
PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS

EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM
A68-81854

CALLEMENT, G.
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS
A68-82008

CALVIN, W. H.
EVALUATING MEMBRANE POTENTIAL AND SPIKE PATTERNS BY EXPERIMENTER-CONTROLLED COMPUTER DISPLAY
A68-81923

CAMPBELL, A.
SOVIET PROBLEMS IN EDUCATION AND TRAINING, GROUP DYNAMICS, OPERATOR PERFORMANCE, TEACHING MACHINES, AND PSYCHOMETRICS
ATD-68-34-108-2 N68-31447

CANARY, J. J.
EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS
A68-81827

CAPORALE, R.
LABYRINTHINE FUNCTIONALITY IN ASTRONAUTS, CONSIDERING WEIGHTLESSNESS EFFECTS
A68-37238

CAPPON, D.
PSYCHOLOGIC AND PHYSIOLOGIC RESPONSES OF PSYCHIATRIC PATIENTS AND NORMALS DURING FIFTY HOURS OF WAKEFULNESS A68-81997

CARA, P.
AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON REGULAR AIRLINE AIRCRAFT A68-38897

CARBONELL, J. R.
PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687 N68-31891

CARNEY, S. A.
EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

CARPENTER, R. B., JR.
CHARACTERISTICS, CONSTRAINTS, AND IMPLICATIONS OF LONG DURATION SPACE MISSIONS BASED ON USE OF AVAILABLE HARDWARE AND MAINTENANCE/REPAIR ACTIONS IN SPACE
NASA-CR-73239 N68-32163

CARRE, R.
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS
A68-38895

VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION A68-38903

CASSOLA, C. A.
PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT COMPATIBLE WITH SERVICEABILITY REQUIREMENTS A68-38482

CATLETT, G. F.
ASYMPTOMATIC HYPERURICEMIA IN AIRLINE PILOTS INVESTIGATED BY BLOOD ASSAYS FOR ELEVATED URIC ACID CONCENTRATION A68-38093

CAZORLA, A.
PHYSIOLOGICAL RESPONSE AND ADAPTATION OF CELLS AND TISSUES TO HYPOXIA
AR-2 N68-30963

CERF, F.
CIRCADIAN RHYTHM EXISTENCE FOR PSYCHOLOGICAL PHENOMENA A68-38901

CHAMBERS, R. M.
PSYCHOLOGICAL ASPECTS OF MANNED SPACE FLIGHT AND PROBLEMS IN RELIABILITY IMPROVEMENT, NOTING CENTRIFUGE ACCELERATION TRAINING AND CONDITIONING
A68-39683

CHARNAIA, P. M.
EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

CHEKHONADSKII, N. A.
MATHEMATICAL SIMULATION METHODS TO STUDY CARDIOVASCULAR SYSTEM CONTROL FUNCTION UNDER EARTH BASED AND WEIGHTLESSNESS CONDITIONS
A68-38219

MATHEMATICAL MODEL OF OTOCONIA TO STUDY VESTIBULAR ANALYSOR UNDER WEIGHTLESSNESS A68-38228

CHEKIRDA, I. F.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

CHENG, M.-F.
TACTILE-KINESTHETIC PERCEPTION OF LENGTH
A68-81821

CHENIAE, G. M.
MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS
A68-38515

CHEREPAKHIN, M. A.
CHANGING GRAVITY CONDITIONS EFFECTS ON HUMAN COORDINATION INDICES, NOTING ACCURACY OF CONTROL LEVER OPERATION BLINDFOLDED OR BY VISUAL CONTROL
A68-38279

CHERNIAKOV, I. N.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES
A68-38291

CHERNIGOVSKII, V. N.
SOVIET COLLECTION OF PAPERS ON SPACE BIOLOGY, VOLUME 7, COVERING WORK ACTIVITY AND BIOTECHNOLOGY A68-38267

HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING
A68-38269

CHERNOV, G. A.
VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

CHERTOK, O. M.
SIGNS AND SYMPTOMS OBSERVED IN HISTORIES OF WORKERS WITH ACUTE HYDROGEN DISULFIDE INTOXICATION A68-81946

CHEVALERAUD, J.
CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS
A68-82014

CHICHKIN, V. A.
HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

CHINN, K. S. K.
EFFECT OF 14,000 FT ALTITUDE ON PROTEIN METABOLISM IN HUMANS A68-81845

CHISTOVICH, L. A.
HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING
A68-38269

CHISUM, G. T.
INTRAOCULAR EFFECTS ON FLASH BLINDNESS, MEASURING DISPLAY DETECTION TIMES FOLLOWING LIGHT ADAPTATION AREAS EXPOSURE IN VARIOUS RETINAL LOCATIONS

A68-38091

CHIZHOV, S. V.
ARTIFICIAL WATER REGENERATION CYCLES FOR WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS A68-38308

CHKHAIDZE, L. V.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

CHOU, C.
DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

CHULKOVA, K. A.
MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

CLARK, B.
EGOCENTRIC LOCALIZATION OF VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE DEFECTIVE OBSERVERS FOR VARIOUS HEAD AND BODY TILTS A68-39327

COBBOLD, A. F.
VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE *AND EXPOSED TO ELECTRIC STIMULATION* A68-81959

COCHIN, P.
HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

COCKETT, A. T. K.
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE A68-38663

COGAN, E. A.
PROBLEMS AND METHODS OF LEARNING AND TRAINING AD-671060 N68-31583

COHEN, E.
HIGH AND LOW INTENSITIES OF LASER IRRADIATION ON SEROLOGIC PROPERTIES OF HUMAN AND RABBIT GAMMA GLOBULIN A68-81896

COLEHOUR, J. K.
PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION NASA-CR-96122 N68-31459

COLIN, J.
PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED *BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS* OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

COLLINS, J. F.
SENSORY TRACES VERSUS PSYCHOLOGICAL MOMENT IN TEMPORAL ORGANIZATION OF FORM A68-81966

COLLINS, W. E.
STIMULUS SIZE AND VIEWING DISTANCE EFFECTS ON DURATION OF ILLUSORY MOTION IN SPIRAL AFTEREFFECT FAA-AM-68-10 N68-32920

COMOY, J.
NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

COOKE, J. P.
PHYSIOLOGICAL RESPONSES OF ANESTHETIZED DOGS EXPOSED TO ANOXIA WITH AND WITHOUT EBULLISM A68-81854

COSTA, L. D.
ELECTROMYOGRAPHIC AND ELECTROENCEPHALOGRAPHIC RESPONSES OF HUMANS PERFORMING VARIOUS MOTOR TASKS A68-81934

COURILLON
AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON REGULAR AIRLINE AIRCRAFT A68-38897

CRANCE, J.-P.
NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

CRAVEN, C. W.
OBJECTIVES AND CRITERIA FOR STERILIZATION AND DECONTAMINATION OF SPACE VEHICLES, STRESSING MARS MISSIONS A68-38076

CREELMAN, C. D.
RECEIVER OPERATING CHARACTERISTICS FOR DISCRIMINATION OF LINEAR EXTENT A68-81974

CROSBY, W. M.
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

CRUSE, D.
TWO-CHOICE DISCRIMINATION LEARNING AS FUNCTION OF *VISUAL STIMULUS AND EVENT PROBABILITIES* A68-81969

CULLIER, J.
STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

CUMMING, G.
DESIGN OF AIR PASSAGES RELATED TO GAS MOVEMENT IN ALVEOLAR VENTILATION A68-81915

D

DADYKIN, V. P.
CULTIVATING PLANTS FOR CLOSED ECOLOGICAL SYSTEMS DURING LONG MANNED SPACE FLIGHTS JPRS-46306 N68-33269

DAL FABBRO, G.
RADIOLOGICAL CONTAMINATION DETECTED DURING CIVILIAN AIRCRAFT FLIGHTS A68-37241

DALLAKIAN, I. G.
HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION A68-38290

DALTON, L. A., JR.
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES ARL-TR-68-6 N68-32695

DALZIEL, C. F.
DELETERIOUS EFFECTS OF ELECTRIC CURRENTS ON HUMAN SYSTEM A68-38581

DAMEY, E.
STATISTICAL STUDY OF SKULL TRAUMATISMS AND MEDICAL STANDARDS OF FLIGHT FITNESS A68-82007

DARENSKAIA, N. G.
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

DAVIDSON, J. R.
SOLVING EQUATIONS OF MOTION TO OBTAIN RELATIONSHIP BETWEEN RANDOM CREW MOTIONS AND ANGULAR CHANGE IN SPACECRAFT ORIENTATION N68-32043

DAVIS, G. L.
ALCOHOL AS CONTRIBUTORY FACTOR IN MILITARY AIRCRAFT ACCIDENT FATALITIES FROM POSTMORTEM TOXICOLOGICAL DATA A68-38092

DAVYDOV, B. I.
BIOCHEMICAL CHANGES IN MICE SUBJECTED TO

ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION
A68-38249

VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA
A68-38252

RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS
A68-38254

ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS
A68-38255

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES
A68-38259

DEANE, F. R.
PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122
N68-31459

PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES
NASA-CR-96199
N68-32424

DEBOTTEN, I.
HUMAN FACTORS EVALUATION OF HEAD-UP DISPLAY AND FLIGHT PERFORMANCE BY PHOTOGRAPHY AND DATA-REDUCTION METHODS
A68-81952

DEGENS, E. T.
CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS
NASA-CR-96453
N68-33555

DEGTIAREV, V. A.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE
A68-38220

DELAHAYE, R. P.
VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION
A68-38903

DELENA, S.
HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION
A68-81844

DELONE, N. L.
WEIGHTLESSNESS AND CELL DIVISIONS IN TRADESCANTIA PALUDOSA MICROSPORES
A68-38248

DELTHIL, S.
FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS
A68-82014

DEMIN, YU. S.
COMBINED EFFECTS OF VERTICAL VIBRATION AND X RAY RADIATION ON NUCLEUS OF BONE MARROW CELLS IN MICE
N68-33288

DEMOCHKINA, N. G.
BIOCHEMICAL CHANGES IN MICE SUBJECTED TO ACCELERATION AFTER EXPOSURE TO GAMMA RADIATION
A68-38249

DENHAM, D. H.
ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS
BNWL-SA-1569
N68-33498

DESCHAMPS, J.-P.
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS
A68-82008

CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS
A68-82009

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS
A68-82010

DEUSER, W. G.
CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS
NASA-CR-96453
N68-33555

DI LUZIO, N. R.
INVOLVEMENT OF OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF RETICULOENDOTHELIAL SYSTEM IN RATS
A68-81909

DIANOV, A. G.
PHYSIOLOGICAL EFFECTS IN RATS OF SUBSTITUTING HELIUM FOR NITROGEN UNDER HYPOXIA AND HIGH CARBON DIOXIDE CONCENTRATIONS
A68-38286

DIEHL, S.
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS
N68-32146

DOBROV, N. N.
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS
A68-38250

DOLEANS, J.-C.
CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION
A68-82012

DOMSHLAK, M. P.
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS
A68-38262

DONALDSON, W.
RECEIVER OPERATING CHARACTERISTICS FOR DISCRIMINATION OF LINEAR EXTENT
A68-81974

DORONIN, G. P.
WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR
A68-38283

DOSE, K.
THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION
N68-32145

DRAKE, K. W.
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089
N68-31363

DRENICK, E. J.
BROMSULPHALEN RETENTION TEST DURING PROLONGED FASTS RELATED TO CHANGES IN PLASMA VOLUME OF OBESE HUMANS
A68-81847

DUCROS, H.
VALIDITY OF UROPEPSIN EXCRETION IN URINE IN MAN AS AN OBJECTIVE TEST INDEX OF FATIGUE IN AEROSPACE MEDICINE
A68-82006

DUDKIN, V. E.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS
A68-38261

DUMBADZE, S. I.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS
A68-38320

DUNLEAVY, J.
PROTECTIVE ARMOR AGAINST BULLETS FOR FLYING PERSONNEL
A68-81815

DURHAM, C. V.
SAFETY MANUAL FOR PERSONNEL USING NEODYMIUM LASERS
APGC-TR-68-53
N68-32994

DVIZHKOV, P. P.
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE
A68-81891

E

EBERLIN, P.
ALPHA BLOCKING IN HUMANS DURING VISUAL AFTERIMAGES AS RELATED TO ATTENTION
A68-81936

EKBERG, D. R.
ORBITAL SPACE STATION EXPERIMENTS FOR STUDYING SPACE ENVIRONMENT AND EFFECTS ON TERRESTRIAL LIFE, NOTING CURRENT BIOMEDICAL INFORMATION
A68-39684

EKMAN, G.
THRESHOLD VALUES AND PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION
A68-81837

EKSTROM, R. M.
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY
A68-81955

ELIAVA, N. L.
PSYCHOLOGICAL FACTORS IN THINKING DIRECTION DURING PROBLEM SOLVING
RTS-4098
N68-32506

ELIVANOV, V. A.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE
A68-38220

ELIZONDO, R.
MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS
A68-81856

ELKIND, J. I.
PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687
N68-31891

ELLIS, H. C.
TACTUAL-KINESTHETIC FEEDBACK FROM MANIPULATION OF VISUAL FORM AND NON-DIFFERENTIAL REINFORCEMENT IN TRANSFER OF PERCEPTUAL LEARNING IN RATS
A68-81971

EMELIANOV, M. D.
PROLONGED ACCELERATION EFFECT ON HUMAN ORGANISM TESTED USING RETINAL BLOOD CIRCULATION OBSERVATIONS
A68-38222

ENDRES, G. W. R.
TEFLON-LITHIUM FLUORIDE THERMOLUMINESCENT DOSIMETER CHARACTERISTICS
BNWL-741
N68-32943

ENGEL, P.
REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE
N68-32153

ENSANIAN, M.
BIOLOGICALLY ORIENTED COSMOLOGICAL THEORY ASSUMING BIOLOGICAL FIELD THEORY, DISCUSSING DETECTION OF EXTRATERRESTRIAL LIFE AND COMMUNICATION
A68-37808

ENSINCK, J. W.
EFFECT OF STARVATION ON PLASMA IMMUNOREACTIVE INSULIN AND NONSUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS
A68-81848

EPSHTEIN, M. M.
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA
A68-81975

EPSTEIN, F. H.
INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS
A68-81931

EREMIN, A. V.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G
A68-38277

ERIKSEN, C. W.
SENSORY TRACES VERSUS PSYCHOLOGICAL MOMENT IN TEMPORAL ORGANIZATION OF FORM
A68-81966

ERIKSSON, E. S.
TWO-DIMENSIONAL FIELD EFFECTS AND STATIC SLANT PERCEPTION OF HUMANS VIEWING MONOCULARLY
A68-81879

ERVIN, G. F.
SPACE VEHICLE STERILIZATION AND DECONTAMINATION, DISCUSSING DRY HEAT STERILIZATION AND CAPSULE SYSTEM ADVANCED DEVELOPMENT
A68-38078

EVANS, M. B.
REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS
A68-81972

EZENCHUK, N. I.
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS
A68-38250

F

FAIRCHILD, R. G.
FISSION NEUTRON SOURCES AND DOSIMETRY IN TISSUE EQUIVALENT PHANTOM - CALIFORNIUM 252
BNL-12452
N68-31645

FARAND
VERTEBRAL COLUMN INJURIES FROM HELICOPTER ACCIDENTS COMPARED WITH INJURIES RESULTING FROM AIRPLANE CRASHES, PARACHUTING AND AIRCRAFT EJECTION
A68-38903

FATRAS, B.
CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY
A68-38894

FAVERO, M. S.
SPACE HARDWARE MICROBE CONTAMINATION ASSESSMENT FOR AEROBIC AND ANAEROBIC SPORES, DISCUSSING EXTENDED INCUBATION AND ENRICHED MEDIA FOR RECOVERY
A68-38666

FAYN, V. S.
VISUAL PERCEPTION AND IMAGE IDENTIFICATION BY READING MACHINES
FTD-MT-66-158
N68-31496

FEDOROV, IU. A.
DEODORIZING AND REFRESHING EFFECTS OF TOOTHPASTES AND ORAL PREPARATIONS INVESTIGATED FOR SELECTION FOR ASTRONAUT HYGIENE
A68-38313

FELLER, D. D.
ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS
A68-38518

FENNING, L. M.
PHYSIOLOGICAL SYSTEMS ANALYSIS OF FLIGHT STRESS-INDUCED TRANSITORY EYE MUSCLE DISORDERS
N68-32154

FEOLA, J. M.
INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS
A68-39326

FIGAROLA, T. R.
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751
N68-32100

FILIPPOV, S. P.
ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS

A68-81874

FINE, S.
HIGH AND LOW INTENSITIES OF LASER IRRADIATION ON SEROLOGIC PROPERTIES OF HUMAN AND RABBIT GAMMA GLOBULIN A68-81896

FINOGENOV, A. M.
CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

ASTRONAUT PERSONAL HYGIENE REQUIREMENTS FOR NORMAL SKIN FUNCTIONING DURING PROLONGED SPACE FLIGHTS A68-38312

FIORICA, V.
CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4 N68-33067

FISCHER, A. P., JR.
DISTURBANCES OF RAPID EYE MOVEMENTS DURING SLEEP IN PATIENTS WITH LESIONS OF NERVOUS SYSTEM A68-81937

FISHER, G. H.
ILLUSIONS AND SIZE CONSTANCY A68-81817

FISHER, I.
CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/ A68-38236

FISSI, E.
ACCELERATION EFFECTS ON PHYSIOPATHOLOGY, HEART AND CIRCULATION OF ASTRONAUTS DURING LAUNCHING AND LANDING A68-37243

FLEKKEL, A. B.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

FOMIN, A. G.
PHYSIOLOGICAL AND HYGIENIC REQUIREMENT OF LIFE SUPPORT SYSTEMS OF VOSTOK AND VOSKHOD SPACE SHIPS A68-38282

FOMIN, M. F.
MATHEMATICAL METHOD TO SELECT FOOD RATION WITH PRESCRIBED COMPOSITION AND CALORIFIC VALUE FROM LIMITED ASSORTMENT OF PRODUCTS A68-38306

FORET, J.
HUMAN REACTIONS TO ACOUSTIC SIGNAL TRANSMISSION TO EARDRUM N68-30948

FORTUNATOW, E.
LITERATURE SURVEY WITH ABSTRACTS ON SOVIET RADIOBIOLOGICAL INVESTIGATIONS
ATD-68-105-108-9 N68-33037

FOWLER, F.
MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

FOWLER, M. S.
COMPARISON OF INSECTS FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT ANGELS
P-14 N68-31442

FOX, B. H.
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR A68-81949

FRANKLIN, D.
TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

FREEDY, A.
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43 N68-31734

FREEMAN, R. B., JR.
PERSPECTIVE DETERMINANTS OF VISUAL SIZE-CONSTANCY IN BINOCULAR AND MONOCULAR CATS A68-81820

FRIEDMAN, A. H.
CIRCADIAN RHYTHMS IN RAT MIDBRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS A68-81988

FROLOV, A. N.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

FROLOV, N. I.
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE A68-38221

FROLOV, S. F.
USE OF HYDROQUININE FOR PREVENTION AND TREATMENT OF OXYGEN DEFICIENCY IN CATS A68-81870

G

GABRIEL, R. F.
IMPROVEMENT OF TIME SHARING PERFORMANCE OF PILOTS THROUGH TRAINING INVOLVING DISPLAY READING AND HAZARD DETECTION A68-81951

GAGUA, KH. G.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

GAIDAMAKIN, N. A.
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

GALKINA, T. B.
GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

GALVIN, R. D.
PROBLEMS ASSOCIATED WITH DETERMINATION OF CARBON DIOXIDE BY INFRARED ABSORPTION A68-81863

GARTLAN, J. L., JR.
TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

GASANOVA, R. L.
ELECTRIC STIMULI OF DOGS TO STUDY FUNCTIONAL STRUCTURE OF TEMPORARY CONNECTION IN AVOIDANCE REACTIONS
NS-59 N68-31791

GASS, A. E., JR.
SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

GAUDY, A. F., JR.
CHANGE OF SALT CONCENTRATION OF INFLOWING WASTE AFFECTING YIELD OF BIOLOGICAL SOLIDS AND ABILITY OF CONTINUOUS CULTURED MICROBES TO REMOVE SUBSTRATE A68-81924

GAUPP, L.
COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE

TR-25 N68-31335

GAZENKO, O. G.
ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE TO EVALUATE ASTRONAUTS CENTRAL NERVOUS SYSTEM FUNCTIONAL STATE A68-38215

GEDEON, J.
STATISTICAL PUBLIC OPINION RESEARCH TO CHECK RELIABILITY OF PILOT OPINIONS ON AIRCRAFT FLIGHT CHARACTERISTICS
ICAS PAPER 68-17 A68-39209

GELEZUNAS, V. L.
BIOLOGICAL CLEANABILITY OF SPACECRAFT SURFACES INVESTIGATED BY RADIOISOTOPE TRACER TECHNIQUES A68-38090

GELLER, E.
BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

GELPI, E.
OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

GENES, S. G.
EFFECT OF INSULIN ON BRAIN UPTAKE OF BLOOD SUGAR IN ANESTHETIZED DOGS ADMINISTERED CHLORPROMAZINE AND RESERPINE A68-81881

GENIN, A. M.
PHYSIOLOGICAL AND HYGIENIC REQUIREMENT OF LIFE SUPPORT SYSTEMS OF VOSTOK AND VOSKHOD SPACE SHIPS A68-38282

GERHARDT, L. A.
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089 N68-31363

GESCHEIDER, G. A.
REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS A68-81972

GIBSON, J. J.
PROPOSED EXPLANATION OF MOTION PERCEPTION IN TERMS OF AMBIENT ARRAY OF LIGHT A68-82001

GILBERT, R.
UNSTEADY-STATE MEASUREMENT OF OXYGEN TRANSFER DURING TREADMILL EXERCISE USING ANALYTICAL CIRCUITS AND ANALOG COMPUTER A68-81860

GLANZER, M.
EVALUATION OF THREE APPROACHES TO FIGURAL ORGANIZATION USING PAIRED-ASSOCIATES DISCRIMINATION-LEARNING TASK VARYING IN COMPLEXITY A68-81819

GLEZER, V. D.
HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING A68-38269

GLIHA, A.
EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR A68-81877

GLOD, G. D.
CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS A68-38218

PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

GOERNER, J. G.
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS
REPT.-9500-920089 N68-31363

GOGEL, W. C.
SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

GOLDA, V.
CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS A68-81913

GOLIKOV, K. K.
EFFECT OF VITAMIN D ON CALCIUM AND PHOSPHORUS CONTENT IN BONES OF ALBINO RATS WITH RELATION TO AMOUNT OF FAT AND CALCIUM IN DIETS A68-81977

GOODRIDGE, A. G.
EFFECT OF STARVATION FOLLOWED BY FEEDING ON ENZYME ACTIVITY AND GLUCOSE METABOLISM IN LIVER OF YOUNG CHICKS A68-81840

GORBUNOVA, I. M.
EXPERIMENTAL PROGRAM TO STUDY ORDERED SEQUENCES OF ACTION WITH LIKE MOTIVE ACT SETS, SAME NUMBER OF ELEMENTS AND DIFFERING IN GROUP DIMENSIONALITY A68-38271

EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS A68-38276

GORDEEVA, N. P.
FREQUENCY SPECTRA IN VARIOUS BRAIN REGIONS OF RABBITS AND HUMANS AND THEIR CHANGES DURING VESTIBULAR AND OPTOKINETIC STIMULI A68-81944

GOZULOV, S. A.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE A68-38220

GRAHAM, J. T.
INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

GRATEAU, P.
NOISE TRAUMA AND RESULTING HEARING DEFICIENCIES CAUSED BY FIRE ARMS IN ARMY POPULATION A68-81887

GRAUL, E. H.
THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE N68-32135

ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM N68-32149

GRAYBIEL, A.
EGOCENTRIC LOCALIZATION OF VISUAL HORIZONTAL IN NORMAL AND LABYRINTHINE DEFECTIVE OBSERVERS FOR VARIOUS HEAD AND BODY TILTS A68-39327

PREVENTING MOTION SICKNESS BY GRADUAL INCREASING EXPOSURE TO CORIOLIS ACCELERATION
NASA-CR-96122 N68-31459

PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES
NASA-CR-96199 N68-32424

GREEN, J. W.
AUDIOMETRY AND SPEECH RECOGNITION THRESHOLDS IN AIRCRAFT NOISE
NAMI-1037 N68-31184

GREENOUGH, W.
BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

GREGORY, R. L.
VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS DURING ACCELERATED OBSERVER MOVEMENT AND CONSTANT VELOCITY A68-39681

GRIGOREV, IU. G.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

GRINBERG, A. V.
MUSCULOSKELETAL CHANGES IN CHRONIC INTOXICATION WITH AGENTS OF BENZOL SERIES A68-81873

GROSE, V. L.
DELETERIOUS EFFECT ON ASTRONAUT CAPABILITY OF VESTIBULO-OCULAR DISTURBANCE DURING SPACECRAFT ROLL ACCELERATION A68-37768

GUARNERI, J. J.
EFFECT OF ETHYL ALCOHOL ON NUMBER AND VIABILITY OF ALVEOLAR MACROPHAGES IN MICE LUNGS A68-81930

GUERRA-GARCIA, R.
TESTOSTERONE PRODUCTION AND HORMONE METABOLISM OF MEN IN HIGH ALTITUDE ENVIRONMENTS
AR-2 N68-31059

GUITART, J. M.
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

GURFINKEL, V. S.
ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE TO EVALUATE ASTRONAUTS CENTRAL NERVOUS SYSTEM FUNCTIONAL STATE A68-38215

GUSKOVA, A. K.
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

GUSTAFSSON, U.
THRESHOLD VALUES AND PSYCHOPHYSICAL FUNCTION IN BRIGHTNESS VISION A68-81837

H

HAAK, A.
BODY COMPOSITION CHANGES IN OBESE HUMANS DURING INTERMITTENT STARVATION A68-81846

HAAS, W.
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

HABERMEHL, A.
ANALOG COMPUTER STUDIES AND MATHEMATICAL MODEL FOR REGULATORY MECHANISM OF HUMAN CALCIUM METABOLISM N68-32149

HAEDRICH, R. L.
CHEMICAL ANALYSIS OF MOLECULAR STRUCTURE AND CHEMICAL COMPOSITION OF FISH OTOLITHS
NASA-CR-96453 N68-33555

HAHN, T. J.
EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION IN HUMANS A68-81841

HALEY, J.
INCREASE IN IRON ABSORPTION OF GUT DUE TO HUMORAL EFFECT OF HYPOXIA IN PARABIOTIC RATS BREATHING LOW OXYGEN CONCENTRATIONS A68-81907

HALL, J. F.
PAIRED-ASSOCIATE LEARNING RELATED TO PRONUNCIATION AND WORD FREQUENCY A68-81902

HALPERN, J.
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

HAMILTON, H. L., JR.
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

HANNES, M.
EFFECT OF STIMULUS REPETITIONS AND ALTERATIONS ON ONE-FINGER AND TWO-FINGER RESPONDING IN TWO-CHOICE REACTION TIME TO VISUAL STIMULI IN HUMANS A68-81992

HANNON, J. P.
EFFECT OF 14,000 FT ALTITUDE ON PROTEIN METABOLISM IN HUMANS A68-81845

HARCUM, E. R.
EFFECTS OF MUTUAL RELEVANCE OF STIMULI IN RIGHT AND LEFT VISUAL HEMIFIELDS ON ORGANIZATIONAL PROCESSES OF PATTERN PERCEPTION A68-81901

HARDY, J. D.
EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

HARMOUNT, T. H.
SPACE ENVIRONMENTAL EFFECTS ON BIOLOGICAL SPECIMENS, DISCUSSING EXPERIMENTATION TECHNIQUE WITH LIFE BIOLOGY IN SPACE FLIGHT A68-37743

HARRIS, C. S.
HIGH INTENSITY NOISE EFFECTS ON HUMAN PERFORMANCE IN VISUAL DISCRIMINATION, MEMORY, AND DEXTERITY
AMRL-TR-67-119 N68-31190

HARRIS, J. W.
BINDING OF SULFHYDRYL TO NORMAL AND IRRADIATED RABBIT LEUCOCYTE LYSOSOMES A68-81880

HARTER, M. R.
EFFECTS OF CONTOUR SHARPNESS AND CHECK SIZE ON VISUALLY EVOKED CORTICAL POTENTIALS A68-81835

HATTNER, R. S.
SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

HAVEL, R. J.
CARBOHYDRATE AND LIPID METABOLISM AND RELATION TO AUTONOMIC NERVOUS SYSTEM AND ENVIRONMENTAL STRESS A68-81832

HAYS, M. B.
PROTECTIVE FLIGHT CLOTHING AND SEA SURVIVAL EQUIPMENT COMPATIBLE WITH SERVICEABILITY REQUIREMENTS A68-38482

HEIDELBAUGH, N. D.
EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY A68-81825

HELLMAN, D. E.
EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS A68-81827

HEMINGWAY, A.
AUTONOMIC NERVOUS SYSTEM AND PHYSIOLOGIC THERMOREGULATION OF BODY TEMPERATURE A68-81831

HEMSWORTH, B. A.
RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION A68-81897

HENTON, W.
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

HERNADI, F.
CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE A68-81912

HEWES, D. E.
STUDIES REVIEW OF PILOT PROBLEMS FOR ONE MAN FLYING UNITS IN SIMULATED LUNAR GRAVITY
NASA-TM-X-61164 N68-33437

HEWITT, J. E.
GAMMA RADIATION EXPOSURE AND WEIGHTLESSNESS EFFECTS COMPARED FOR BIOLOGICAL MATERIAL DURING BIOSATELLE 2 FLIGHT AND IN EARTH CONTROL CAPSULE, NOTING RADIATION SOURCES A68-37453

HILDEBRANDT, G.
REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE N68-32153

HILL, P. R.
SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

HILLIER, A. P.
BILIARY-FECAL EXCRETION OF THYROXINE DURING COLD EXPOSURE IN RAT A68-81989

THYROXINE DEIODINATION DURING COLD EXPOSURE IN RATS AFFECTED BY VARIOUS DRUGS A68-81990

HILLS, B. A.
RELEVANT PHASE CONDITIONS FOR PREDICTING OCCURRENCE OF DECOMPRESSION SICKNESS IN GOATS A68-81861

HIMWICH, H. E.
EFFECTS OF AMPHETAMINE ON SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS A68-81916

HINTERKEUSER, E. G.
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

HISDAL, E.
THEORETICAL EXPRESS DERIVED FOR LEAST DISTINGUISHABLE STEP IN NUMBER OF PULSES FROM AREA WHOSE IMAGE IS FOCUSED ON AND MEASURED BY SINGLE PHOTOEMISSIVE DETECTOR A68-81999

HIXSON, W. C.
ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

TRIAXIAL MULTIPLE CHANNEL ACCELEROMETER MODULE FOR VESTIBULAR STIMULATION MEASUREMENTS IN AIRCRAFT
NASA-CR-96298 N68-32734

HOLLINGSWORTH, D. R.
INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS A68-81931

HONEY, R. C.
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

HORSFIELD, K.
DESIGN OF AIR PASSAGES RELATED TO GAS MOVEMENT IN ALVEOLAR VENTILATION A68-81915

HORWITZ, B. A.
BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

HOUDAS, Y.
PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

HOWARD, D.
DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

HOWE, J. A. M.
VISUAL PERCEPTION IN SIMULATED SPACE CONDITIONS DURING ACCELERATED OBSERVER MOVEMENT AND CONSTANT VELOCITY A68-39681

HRASEOVA, V.
EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES A68-81830

HSIEH, Y. C.
EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

HUEBNER, K.
EXPERIMENTAL STUDY OF BIOLOGICAL PRINCIPLE OF RHYTHMIC DEOXYRIBONUCLEIC ACID SYNTHESIS N68-32152

HUSSMANN, E.
HETEROCYCLIC COMPOUNDS CONTAINING NITROGEN OBTAINED AFTER X RAY IRRADIATION OF AQUEOUS SOLUTIONS OF ALIPHATIC AMINES AND AMINO ACIDS N68-32147

I

IAKOVLEVA, E. S.
MICROMORPHOLOGICAL CHANGES IN MUSCULAR FIBERS DURING INTENSIVE PHYSICAL WORK IN ALBINO RATS A68-81889

IAKOVLEVA, E. V.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE A68-38220

IAROSHENKO, G. L.
HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

IATSKOVSKII, A.
REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION A68-38243

IAZDOVSKII, V. I.
HETEROTROPHIC ORGANISMS AS HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS A68-38307

IGARASHI, M.
PATHOLOGICAL CHANGES AND MORPHOLOGY OF SQUIRREL MONKEYS DETERMINED IN SCREENING FOR VESTIBULAR FUNCTION STUDIES
NASA-CR-96199 N68-32424

IILEK, L.
CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/ A68-38236

ILIANOK, V. A.
FREQUENCY SPECTRA IN VARIOUS BRAIN REGIONS OF

RABBITS AND HUMANS AND THEIR CHANGES DURING VESTIBULAR AND OPTOKINETIC STIMULI A68-81944

IMAI, Y.
BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

INABA, K.
HUMAN ERROR MEASUREMENT TECHNIQUE USING USAF MAINTENANCE DATA A68-37616

INAKURA, M.
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

IROSHNIKOVA, G. P.
EXCRETION OF BILE ACIDS IN RABBITS DURING FUNCTIONAL STRESS OF NERVOUS SYSTEM OF INTENSE ACTIVITY A68-81883

IRVINE, A. R., JR.
RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34 N68-32088

ISAKOV, P. K.
RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

IUGANOV, E. M.
EFFERENT IMPULSATION OF VAGUS OF RABBITS WITH INTACT AND SEVERED LABYRINTHS UNDER CONDITIONS OF WEIGHTLESSNESS A68-38225

NORMALIZATION OF NOISE PRODUCED BY LIFE SUPPORT SYSTEMS IN SPACESHIP CABINS DURING PROLONGED FLIGHTS A68-38298

IUKHNOVSKII, G. D.
HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

IUNUSOV, A. IU.
ROLE OF CELLULAR MECHANISMS IN ADAPTATION OF ANIMALS TO HIGH TEMPERATURES A68-81945

IVANOV, D. I.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

IVANOV, E. A.
PHOTOSYNTHESIS IN CHLORELLA UNDER CONSTANT CONDITIONS OF GROWTH A68-38321

IVANOVA, A. S.
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE A68-81891

IZGINA, N. Z.
NOVOCAIN POTENTIATION OF CHLORPROMAZINE TRANQUILIZING PROPERTIES IN ANIMALS A68-81866

J

JACKSON, J. K.
LIFE SUPPORT SYSTEM DESIGN, CONSIDERING LONG MANNED SPACE MISSIONS AND REGENERATIVE SUBSYSTEMS FOR WATER AND OXYGEN RECOVERY A68-38507

JACQUEMIN, CH.
GAS INERTANCE AND BAROMETRIC PRESSURE - MATHEMATICAL METHODS OF MEASUREMENT A68-82013

JANKOWSKA, E.
INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

JEFFREY, W. E.
ORIENTING REFLEX AND ATTENTION IN COGNITIVE DEVELOPMENT AS RELATED TO PROBLEM SOLVING BEHAVIOR A68-82003

JOHNSON, C. H.
ASTRONAUT MOTION EFFECT ON PRECISE CONTROL OF SPACECRAFT ATTITUDE A68-37790

JOHNSON, H. D.
SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

JOHNSON, K. A.
AIRBORNE RADAR AND RADIO ELECTRONICS TRAINING COURSES
NPRA-STB-68-10 N68-31387

JOHNSON, R. L., JR.
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

JOHNSON, W. A.
EXPERIMENTAL REQUIREMENTS FOR MEASURING VESTIBULAR AND CARDIOVASCULAR PHYSIOLOGY RESPONSES USING ORBITAL ONBOARD HUMAN CENTRIFUGE DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66651 N68-33298

JONES, G. E.
INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

K

KABAKCHIEV, K.
PILOT RESISTANCE TO RADIAL ACCELERATION - STUDY CARRIED OUT BY BULGARIAN AIR FORCE A68-81898

KADO, R. T.
ELECTRODE PROBLEMS IN RECORDING SKIN RESPONSES IN FREELY MOVING SUBJECTS NOTING IMPLANTATION, ELECTROMECHANICAL AND RADIO SIGNAL INTERFERENCE A68-38517

KAISER, P. K.
APPARATUS FOR MEASUREMENT OF PERCEIVED SHAPE A68-81824

KALES, A. N.
EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION IN HUMANS A68-81841

KALTWASSER, H.
HYDROGENOMONAS SPECIES STUDIED FOR UTILIZATION OF ORGANIC NITROGEN COMPOUNDS AND USE IN CLOSED ECOLOGICAL SYSTEMS N68-32141

KAPLAN, R.
SIDE TO SIDE HEAD VIBRATION EFFECTS ON VISUAL ACUITY MEASUREMENTS
NASA-CR-96466 N68-33093

KARIMOVA, M. M.
ELECTROCARDIOGRAPHIC ACTIVITY DURING MENTAL AND EMOTIONAL STRESS A68-81982

KARKISHCHENKO, N. N.
MORPHOLOGICAL AND PHYSIOLOGICAL CHANGES IN BRAIN OF CATS GIVEN CHLORPROMAZINE A68-81868

KARLANDER, E. P.
STEROL BIOSYNTHESIS PATHWAYS IN CHLORELLA ELLIPSOIDEA, DISCUSSING FUCOSTEROL CONVERSION TO CLIONASTEROL A68-39267

KARLJ, S.
EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR A68-81877

KARNEGIS, J. N.
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT

NASA-CR-92220 N68-32973

KASHKOVSKII, I. I.
GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE
A68-38323

KASIAN, I. I.
MATHEMATICAL SIMULATION METHODS TO STUDY CARDIOVASCULAR SYSTEM CONTROL FUNCTION UNDER EARTH BASED AND WEIGHTLESSNESS CONDITIONS
A68-38219

PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT
A68-38278

KATHREN, R. L.
ATMOSPHERIC TRITIUM EFFECTS ON PHOTOGRAPHIC, THERMOLUMINESCENT, AND RADIOPHOTOLUMINESCENT DOSIMETERS
BNWL-SA-1569 N68-33498

KATZ, A. I.
INFLUENCE OF CARBOHYDRATE AND PROTEIN ON SODIUM EXCRETION DURING FASTING AND REFEEDING IN OBESE PATIENTS
A68-81931

KATZ, Y. J.
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE
A68-38663

KAUFMAN, D. A.
PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE
A68-81979

KAVANAGH, L.
DESIGN OF SUBMINIATURE CRYSTAL CONTROLLED BIOLOGICAL TRANSMITTER FOR INTERNAL OR EXTERNAL USE
A68-81814

KAWAMURA, H.
VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS
A68-81961

KAWANAMI, H.
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

KENNEDY, J.
HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION
A68-81844

KERSANC, E.
EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR
A68-81877

KHALTURIN, V. S.
CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES
A68-38309

KHOMERIKI, T. L.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS
A68-38320

KHVEDELIDZE, M. A.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS
A68-38320

KIDERA, G. J.
ASYMPTOMATIC HYPERURICEMIA IN AIRLINE PILOTS INVESTIGATED BY BLOOD ASSAYS FOR ELEVATED URIC ACID CONCENTRATION
A68-38093

KINCANNON, D. F.
CHANGE OF SALT CONCENTRATION OF INFLOWING WASTE AFFECTING YIELD OF BIOLOGICAL SOLIDS AND ABILITY OF CONTINUOUS CULTURED MICROBES TO REMOVE SUBSTRATE
A68-81924

KISLIAKOV, V. A.
HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING
A68-38269

KITAEV-SMYK, L. A.
OPTICAL ILLUSIONS ASSOCIATED WITH WEIGHTLESSNESS ATTRIBUTED TO INVERSE AFFERENTATION INFLUENCE WHICH SIGNALS CHANGES IN OCULOMOTOR APPARATUS
A68-38280

OPTICAL ILLUSIONS OF SUBJECTS UNDER WEIGHTLESSNESS COMBINED WITH ANGULAR AND CORIOLIS ACCELERATIONS
A68-38281

KIYONARI, H.
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

KLAIN, G. J.
EFFECT OF 14,000 FT ALTITUDE ON PROTEIN METABOLISM IN HUMANS
A68-81845

KLASSOVSKII, IU. A.
RELATIONSHIP BETWEEN THYROID GLAND FUNCTIONS AND CHOLINASTERASE ACTIVITY IN DOGS AFTER SEVERE RADIATION SICKNESS
A68-38254

KLEIN, E.
HIGH AND LOW INTENSITIES OF LASER IRRADIATION ON SEROLOGIC PROPERTIES OF HUMAN AND RABBIT GAMMA GLOBULIN
A68-81896

KLEINMAN, D. L.
MATHEMATICAL MODEL OF HUMAN OPERATOR AS OPTIMAL CONTROLLER AND INFORMATION PROCESSOR
NASA-CR-1151 N68-33304

KLEINMAN, K. M.
TASK COMPLEXITY, ELECTRODERMAL ACTIVITY, AND REACTION TIME IN HUMANS
A68-81994

KLEVTSOV, M. I.
EXPERIMENTAL MODELS OF RADIOELECTRONIC EQUIPMENT FOR TEMPORAL MEASUREMENTS OF HUMAN REFLEXES
FTD-MT-66-133 N68-31303

KNIGHT, P. L., JR.
LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS
A68-81906

KNUDSEN, K. B.
EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY
A68-81825

KOBAYASHI, M.
FEASIBILITY OF STUDYING DRIVER REACTION TO SUDDEN PEDESTRIAN EMERGENCIES IN AUTOMOBILE SIMULATOR
A68-81949

KOCHETKOVA, T. A.
PROTECTIVE EFFECT OF AMINOALKYLPOLYPHOSPHONIC ACID IN ACUTE INTOXICATION WITH SOLUBLE BERYLLIUM COMPOUNDS IN RATS AND MICE
A68-81891

KOCHETOV, A. K.
ELECTROENCEPHALOGRAM CLASSIFICATION REGARDING PILOT SELECTION
A68-38264

KOFRANEK, V.
EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES
A68-81830

KOKES, A.
EVALUATION OF SODIUM 24 ACTIVITY IN RELATION TO MORTALITY IN RATS AS INDICATOR OF NEUTRON IRRADIATION DOSES
A68-81830

KOLNSBERG, H.
DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT
NASA-CR-66637 N68-31243

KOLOSKOVA, IU. S.
ARTIFICIAL WATER REGENERATION CYCLES FOR WATER

SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS
A68-38308

KOLOSOV, I. A.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G
A68-38277

KONDRATEV, IU. I.
CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS
A68-38305

KONIG, C.
PROLONGED ORGANOTROPHIC GROWTH OF HYDROGENOMONAS H 16 IN CHEMOSTATS
A68-81918

KONOPLIANNIKOV, A. G.
RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES
A68-38253

KOROLEV, IU. N.
SINGLE AND MULTIPLE ACCELERATION EFFECTS ON DOG LUNGS, DISCUSSING CHANGES IN VASCULAR AND PARENCHYMAL STRUCTURE
A68-38238

KOROLEV, V. V.
MORPHOLOGICAL CHANGES IN KIDNEYS OF DOGS SUBJECTED TO SINGLE CHEST-TO-BACK ACCELERATIONS
A68-38240

KOROTAEV, M. M.
GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY
A68-38322

KOSTIN, V. K.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE
A68-38220

BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS
A68-38300

KOSTYGOV, N. M.
MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION
A68-81869

KOTOVA, E. S.
PROLONGED ACCELERATION EFFECT ON HUMAN ORGANISM TESTED USING RETINAL BLOOD CIRCULATION OBSERVATIONS
A68-38222

KOTOVSKAIA, A. R.
VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS
A68-38216

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION
A68-38293

KOTOVSKII, E. F.
REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION
A68-38243

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS
A68-38244

KOVACS, P.
CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE
A68-81912

KOVALEV, E. E.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS
A68-38261

KOZAR, M. I.
CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT
A68-38311

KOZHEVNIKOV, V. A.
HUMAN SENSORY SYSTEM ADAPTABILITY TO SPACESHIP ENVIRONMENT FOR INFORMATION PROCESSING
A68-38269

KOZLOV, V. A.
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS
A68-38250

KRAMPITZ, G.
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS
N68-32146

KRASOVITSKAIA, M. L.
EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLOROETHYLENE IN ADULT AND NEWBORN RATS
A68-81890

KRAUKLIS, A. A.
PHYSIOLOGICAL MECHANISMS FOR SELF-REGULATION OF HIGHER NERVOUS ACTIVITY IN ANIMALS AND MAN
FTD-HT-23-808-67
N68-32030

KREJCI, F.
ELECTRONYSTAGMOGRAPHIC EXAMINATION OF EFFECT OF LARGE DOSES OF DIMENHYDRINATE ON SPONTANEOUS NYSTAGMUS OF VARIOUS ORIGIN
RAE-LIB-TRANS-1298
N68-31916

KRIUCHKOV, V. A.
CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES
A68-38309

KRONENBERG, R. S.
EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY
A68-81825

KRUEGER, H.
THEORY AND CONSTRUCTION OF TISSUE-EQUIVALENT PROPORTIONAL COUNTER FOR DOSIMETRY IN SPACE
N68-32135

KRULIKH, L.
CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/
A68-38236

KRUSEMARK, K. A.
INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH USE OF COMPUTER TECHNIQUES
A68-81954

KRYLOV, IU. V.
NORMALIZATION OF NOISE PRODUCED BY LIFE SUPPORT SYSTEMS IN SPACESHIP CABINS DURING PROLONGED FLIGHTS
A68-38298

ACOUSTIC ANALYZER FUNCTION DURING PROLONGED EXPOSURE OF MAN TO ARTIFICIAL ATMOSPHERE
A68-38299

KRYLOVA, E. V.
AMMONIA IN GASTRIC JUICE OF PATIENTS WITH CHRONIC INTOXICATION BY NITRODERIVATIVES OF BENZENE AND ITS HOMOLOGUES
A68-81987

KRYTER, K. D.
AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193
N68-33005

KUBICEK, W. G.
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT
NASA-CR-92220
N68-32973

KUDINA, L. P.
ELECTROMYOGRAMS IN RELATION TO SYNCHRONIZATION OF MOTOR NEURONS IN HEALTHY AND DISEASED

PERSONS A68-81940

KUDRIASHOV, E. I.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

KUDRIASHOV, IU. B.
RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

KUDRIAVTSEVA, N. N.
ELECTROENCEPHALOGRAMS OF DOGS EXPOSED TO AUDITORY STIMULI OF VARYING INTENSITIES FOR PROLONGED PERIOD OF TIME A68-81980

KUDRIAVTSEVA, V. I.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

KUDROVA, R. V.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

KUEHN, G. D.
RIBULOSE-1, 5-DIPHOSPHATE CARBOXYLASE SYNTHESIS AND DEGRADATION IN HYDROGENEMONAS FACILIS AND HYDROGENEMONAS EUTROPHA, NOTING EFFECTS OF AERATION, FERRIC CHLORIDE AND OXYGEN TENSION A68-38664

KUENKEL, H. A.
BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS N68-32134

KULKIN, S. G.
IONIZING RADIATION AND FLIGHT SIMULATION EFFECTS ON GUINEA PIGS STUDIED FROM PATHOMORPHOLOGICAL, HEMATOLOGICAL AND HISTOLOGICAL EXAMINATIONS OF ORGANS A68-38250

KURAPOVA, O. A.
GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

KUSTOV, V. V.
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

GASEOUS TOXIC SUBSTANCES LIBERATED BY HUMAN URINE AT 38 C AND BY SAMPLES STORED AT 18 TO 20 C A68-38315

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

REVIEW OF SOVIET PAPERS CONCERNING AIR MEDIA STATE IN AIRTIGHT MANNED VOLUMES, DISCUSSING TOXICOLOGY OF POLYMER MATERIALS A68-39200

KUTATELADZE, M. G.
CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING A68-38229

REACTION OF INDIVIDUAL NEURONS OF AUDITORY REGION OF FELINE CEREBRAL CORTEX TO ADEQUATE IRRITATION OF VESTIBULAR APPARATUS A68-38230

KUZMINOV, A. P.
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

KUZNETSOV, A. G.
WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR A68-38283

KUZNETSOV, M. I.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

KUZNETSOV, V. S.
HELIUM-OXYGEN MIXTURE BREATHING EFFECTS ON VOCAL FREQUENCY AND AMPLITUDE, NOTING SUBSTANTIAL QUALITY DETERIORATION OF COMMUNICATIONS A68-38287

NORMALIZATION OF NOISE PRODUCED BY LIFE SUPPORT SYSTEMS IN SPACESHIP CABINS DURING PROLONGED FLIGHTS A68-38298

KUZNETSOVA, M. A.
COMBINED EFFECTS OF VIBRATION AND IONIZING RADIATION ON FUNCTIONAL STATE OF SPINAL REFLEX ARC OF GUINEA PIGS N68-33287

L

LA GRONE, A. H.
COMPARISON OF INSECTS FLIGHT CHARACTERISTICS WITH OBSERVED CHARACTERISTICS OF RADAR DOT ANGELS
P-14 N68-31442

LAFFERTY, R.
GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS N68-32140

LAFONTAINE
AEROMEDICAL EVACUATION OF SICK AND WOUNDED ON REGULAR AIRLINE AIRCRAFT A68-38897

LAFONTAINE, E.
TRANSATLANTIC FLIGHT EFFECTS ON CIRCADIAN RHYTHM A68-38900

LAMI, R.
HUMAN PILOT OPINION OF AIRCRAFT SAFETY PERFORMANCE ASSISTANCE PROVIDED BY AUTOMATIC SYSTEMS DURING INSTRUMENT TAKEOFF AND LANDING A68-38565

LARIN, F. F.
DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

LARMIE, F. M.
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751 N68-32100

LAUBACH, L. L.
ANTHROPOMETRIC EAR SIZE DETERMINATION FROM HUMAN PHOTOMETRIC SLIDES
AMRL-TR-67-203 N68-31454

LAURENZI, G. A.
EFFECT OF ETHYL ALCOHOL ON NUMBER AND VIABILITY OF ALVEOLAR MACROPHAGES IN MICE LUNGS A68-81930

LAVENDER, H. J., JR.
RED-GREEN PARADOX IN COLOR CODING INDICATING PLATFORM MOVING OR NOT MOVING AND CONFUSION FROM SYSTEM VERSUS COMPONENT STANDPOINT AS RELATED TO SAFETY A68-81955

LAVERHHE, J.
TRANSATLANTIC FLIGHT EFFECTS ON CIRCADIAN RHYTHM A68-38900

LAWRENCE, J. C.
EFFECT OF MICROWAVES AT X BAND ON GUINEA PIG SKIN IN TISSUE CULTURE - MICROWAVE APPARATUS FOR EXPOSING TISSUE AND EFFECT OF RADIATION ON SKIN RESPIRATION A68-81928

EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

LAWSON, R. B.
CHANGE IN LATERAL DISPLACEMENT OF FORM PRODUCING CORRESPONDING INCREASES OF DEPTH OF PLANAR SURFACE A68-81921

LEBEDEV, V. I.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

SOVIET BOOK ON SPACE AND TIME PERCEPTION IN OUTER SPACE, DISCUSSING COSMONAUT ROLE IN MAN VEHICLE SYSTEM A68-38335

LEBEDEVA, E. K.
GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

LEBEDINSKII, A. V.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

LEE, C. O.
X RAY EFFECTS ON PHOSPHOLIPIDE AND PRESSURES
NASA-CR-96228 N68-32427

LEITHEAD, C. S.
BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

LEMASOV, B. V.
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE A68-38221

LEMIEUX, G.
EFFECT OF STARVATION ON METABOLIC BALANCE IN MONGREL AND DALMATIAN DOGS A68-81850

LEONARD, W. C.
COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE
TR-25 N68-31335

LEONOV, A. A.
SOVIET BOOK ON SPACE AND TIME PERCEPTION IN OUTER SPACE, DISCUSSING COSMONAUT ROLE IN MAN VEHICLE SYSTEM A68-38335

LESHCHENKO, V. E.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

LESLIE, J. M.
HUMAN FREQUENCY RESPONSE IN PURSUIT TRACKING AS FUNCTION OF VISUAL FEEDBACK DELAY A68-81956

LEVASHOV, V. V.
ASTRONAUT PERSONAL HYGIENE REQUIREMENTS FOR NORMAL SKIN FUNCTIONING DURING PROLONGED SPACE FLIGHTS A68-38312

LEVINE, J. M.
DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

LEVTOVA, F. A.
ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

LEY, A.
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

LEY, A., JR.
CHRONIC AND SUBACUTE LABYRINTHINE DISORDERS AS CAUSATIVE AGENT IN SOME NEUROLOGICAL SYNDROME IN MAN A68-81886

LI, Y. T.
HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY
NASA-CR-96290 N68-33241

LIEBL, V.
ORIGINS OF LIFE AND EVOLUTION FROM MOLECULES TO CELLS, DISCUSSING BIOCHEMISTRY, ENERGETIC METABOLISMS AND COACERVATE SYSTEMS A68-39685

LIEBLOVA, J.
ORIGINS OF LIFE AND EVOLUTION FROM MOLECULES TO CELLS, DISCUSSING BIOCHEMISTRY, ENERGETIC METABOLISMS AND COACERVATE SYSTEMS A68-39685

LIM, S. T.
CARDIOVASCULAR DECONDITIONING AFTER SPACE TUMBLING
SAM-TR-68-32 N68-32800

LIND, A. R.
BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

LINDSAY, J. R.
HISTOPATHOLOGIC BASIS OF DISORDERS OF PERIPHERAL VESTIBULAR SYSTEM PRODUCING VERTIGO A68-81811

LISONEK, P.
CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS A68-81913

LOBZIN, P. P.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

LOESCHE, W. J.
PROTEIN AND CARBOHYDRATE COMPOSITION OF CECAL CONTENTS OF GNOTOBIOTIC RATS AND MICE A68-81908

LOMONACO, T.
ASTRONAUT PROTECTION AGAINST EXTREME TEMPERATURE CHANGES NOTING PHYSIOLOGICAL AND PHYSICAL MECHANISMS FOR ADAPTATION TO COLD AND HEAT A68-37240

LOMSADZE, M. SH.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

LOTZ, R. G. A.
SCOPE AND PROBLEMS OF READYING EXTRATERRESTRIAL BIOLOGICAL EXPERIMENT FOR LAUNCH AND FLIGHT N68-32137

LOUDERMILK, J.
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

LUCACCINI, L. F.
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43 N68-31734

LUDVIGH, E.
DEPENDENCE OF AMPLITUDE OF FUSIONAL CONVERGENCE MOVEMENTS ON VELOCITY OF ELICITING FOVEAL STIMULI A68-81842

LUEBBERS, D. W.
CONTINUOUS METHODS FOR CONTROLLING OXYGEN SUPPLY OF HUMAN BODY N68-32148

LUKAS, J. S.
AWAKENING AND STARTLE EFFECTS OF SIMULATED SONIC BOOMS
NASA-CR-1193 N68-33005

LUND, S.
INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

LUNDBERG, A.
INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

LUTERMAN, D.
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

LYMAN, J.
ADAPTATION OF BANG-BANG SWITCHING SYSTEM FOR CONTROL OF ARTIFICIAL ARM
TR-43 N68-31734

M

MAC CASLIN, E. F.
PROBLEMS AND METHODS OF LEARNING AND TRAINING
AD-671060 N68-31583

MAC INTYRE, B. A.
MECHANISM OF ENHANCEMENT OF SWEATING IN HUMANS BY LOCALIZED HEATING AS AFFECTED BY VARIOUS DRUGS A68-81856

MACKWORTH, J. F.
EFFECT OF SIGNAL RATE ON PERFORMANCE IN TWO KINDS OF VIGILANCE TASK A68-81948

DECREMENT IN PERFORMANCE IN VIGILANCE TASKS RELATED TO HABITUATION OF NEURAL RESPONSES TO BACKGROUND EVENTS A68-82002

MAIA, I. G.
TELEMETRY OF ARTERIAL FLOW IN VARIOUS CONDITIONS IN MAN WITH DOPPLER ULTRASONIC FLOWMETER A68-81998

MAKARENKO, N. A.
SYMPATHOADRENAL SYSTEM IN PATIENTS WITH VIBRATION DISEASE A68-81986

MAKOTCHENKO, V. M.
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

MAKSIMOV, D. G.
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

MALIAROVA, L. K.
EFFECT OF CHRONIC INTOXICATION OF SMALL CONCENTRATIONS OF ETHYLENE AND TRICHLOROETHYLENE IN ADULT AND NEWBORN RATS A68-81890

MALININA-PUTSENKO, V. P.
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

MALKIN, V. B.
ELECTROENCEPHALOGRAPHIC STUDIES IN SPACE MEDICINE TO EVALUATE ASTRONAUTS CENTRAL NERVOUS SYSTEM FUNCTIONAL STATE A68-38215

ELECTROENCEPHALOGRAM CLASSIFICATION REGARDING PILOT SELECTION A68-38264

HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

HIGH MOUNTAIN CONDITIONS ADAPTATION EFFECT ON HUMAN RESISTANCE TO ACUTE HYPOXIA AND HIGH TEMPERATURES A68-38292

MAMONTOV, V. IA.
VIBRATIONAL AND LINEAR ACCELERATIONS EFFECTS ON FISH NOTING FREQUENCY OF VIBRATION ROLE A68-38327

MANIASHIN, IU. A.
SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

MANSUROV, A. R.
WHITE RAT RESPONSES TO PROLONGED EXPOSURE TO ATMOSPHERE OF PURE OXYGEN AT PRESSURE OF 198 TORR A68-38283

MARCHIAFAVA, P. L.
VISUAL CORTEX EVOKED POTENTIALS DURING EYE TRACKING MOVEMENTS IN CATS A68-81961

MARGARIA, R.
EXERCISE AT ALTITUDE - CONFERENCE, MILAN, SEPTEMBER- OCTOBER 1966 A68-37513

MARKARIAN, S. S.
INTERACTION OF SEMICIRCULAR CANALS AND OTOLITHIC APPARATUS FROM SENSORY AND NYSTAGMIC REACTIONS OF HUMANS SUBJECTED TO POSITIVE AND NEGATIVE ACCELERATION A68-38226

PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION A68-38242

MARKELOV, B. A.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

MARSH, J. T.
FREQUENCY-FOLLOWING MICROPHONIC-LIKE NEURAL RESPONSES EVOKED BY SOUND IN CATS A68-81939

MARTIN, I. F.
MANGANESE DEFICIENCY EFFECT UPON OXYGEN AND QUANTUM YIELDS OF PHOTOSYNTHESIS AND QUINONE PHOTOREDUCTION IN SCENEDESMUS CELLS A68-38515

MARTINEZ-OFERRALL, J. A.
REVIEW OF LITERATURE ON BIOLOGICAL RHYTHMS IN PLANTS, ANIMALS AND HUMANS A68-81829

MARTSEVICH, M. S.
ROLE OF SMALL INTESTINE IN CONTROLLING BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS A68-38246

MARUM, K. D.
REPRODUCTION AND RATIO-PRODUCTION OF BRIEF DURATION UNDER CONDITIONS OF SENSORY ISOLATION A68-81818

MASHINSKAIA, T. E.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC

BACTERIA E COLI K-12/GAMMA/ A68-38256

MASHKOVTSEV, IU. V.
LYMPHOID ORGANS OF DOGS AFTER SINGLE AND MULTIPLE ACCELERATIONS A68-38241

MASLENITSKAIA, R. G.
OCCURRENCE OF CATARACTS IN WORKERS EXPOSED TO HEAT AND GLARE A68-81864

MASSARO, D. W.
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION A68-81970

MASTRIUKOVA, V. M.
HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

MATSON, R.
HUMAN ERROR MEASUREMENT TECHNIQUE USING USAF MAINTENANCE DATA A68-37616

MATSUBARA, H.
AMINO ACID SEQUENCE DETERMINED FROM DIGESTS OF SPINACH FERREDOXIN, NOTING SIMILARITY TO BACTERIAL FERREDOXINS A68-38519

MATSUURA, K.
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

MC KINNON, P.
DEPENDENCE OF AMPLITUDE OF FUSIONAL CONVERGENCE MOVEMENTS ON VELOCITY OF ELICITING FOVEAL STIMULI A68-81842

MC MORRIS, A. H.
MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING RESPONSES
ARL-TR-68-4 N68-32814

MC NICOL, G. W.
BLOOD PRESSURE, HEART RATE, AND FATIGUE LEVELS OF HUMANS CARRYING WEIGHTS BY HAND AND BY SHOULDER HARNESS A68-81857

BLOOD PRESSURE AND HEART RATE CHANGES DURING SYNCOPE INDUCED BY TILTING MEN IN HOT ENVIRONMENTS A68-81858

MCFADDEN, B. A.
RIBULOSE-1, 5-DIPHOSPHATE CARBOXYLASE SYNTHESIS AND DEGRADATION IN HYDROGENEMONAS FACILIS AND HYDROGENEMONAS EUTROPHA, NOTING EFFECTS OF AERATION, FERRIC CHLORIDE AND OXYGEN TENSION A68-38664

MCMILLAN, D. E.
SKELETAL ATROPHY IN ASTRONAUTS DUE TO SPACE FLIGHT WEIGHTLESSNESS, NOTING ABNORMAL CA LOSSES AND REDUCED BONE DENSITY A68-38089

MDIVANI, K. D.
HUMAN REACTIONS AND ORGANIZING ACTIVITY IN TIME PERCEPTION FOLLOWING EXPOSURE TO LIGHT SIGNALS
RTS-4099 N68-32582

MEAD, J.
USE OF MODIFIED BAROSPIRATOR TO DETERMINE AIRWAY RESISTANCE IN MAN A68-81862

MEDVEDEV, D. I.
MORPHOLOGICAL AND HISTOCHEMICAL CHANGES IN PRECORONARY REGION OF CANINE CEREBRAL CORTEX AS RESULT OF TRANSVERSE G FORCES A68-38235

MEGIRIAN, D.
VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

MELCHING, W. H.
HUMAN FACTORS AND MANS ROLE IN MAN MACHINE SYSTEMS APPLIED TO ALLOCATIVE DECISION MAKING
AD-671128 N68-31149

MELESHKO, G. I.
PHYSIOLOGICAL-ECOLOGICAL INVESTIGATIONS OF CHLORELLA CULTURES AS LINK IN CLOSED ECOLOGICAL SYSTEM A68-38319

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

MELNIKOV, G. B.
VIBRATIONAL AND LINEAR ACCELERATIONS EFFECTS ON FISH NOTING FREQUENCY OF VIBRATION ROLE A68-38327

MELVILLE, G. S., JR.
SULFHYDRYLAMINE DRUGS EFFECT FOR PROTECTION IN RATS EXPOSED TO HIGH, LOW, SUBLETHAL, LETHAL AND SUPRALETHAL DOSE OF X AND GAMMA RADIATION A68-38086

MENOU, J.
CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

MERABISHVILI, N. V.
CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING A68-38229

ACTIVITY OF INDIVIDUAL NEURONS OF RETICULAR FORMATION OF MEDULLA OBLONGATA IN CATS DURING VERTICAL ACCELERATION A68-38231

MERIKLE, P. M.
UNIT SIZE AND INTERPOLATED-TASK DIFFICULTY AS DETERMINANTS OF SHORT-TERM RETENTION A68-81963

MERSHON, D. H.
SIZE PERCEPTION ILLUSION COMPARED FOR EXTRANEOUS OBJECTS IN WINDOWS OF AMES MONOCULAR DISTORTED AND RECTANGULAR ROOMS A68-39959

MEYER, R. H.
INCREASING MILITARY PROBLEM OF NOISE INCLUDING METHODS OF HEARING MEASUREMENT AND EAR PROTECTION A68-81816

MICHON, J. A.
EXPERIMENTAL STUDY OF TIME PERCEPTION DURING INFORMATION PROCESSING WITH SHORT INTERVALS
IZF-1968-10 N68-32407

MIDDLETON, W. C.
MANNED ORBITAL LABORATORY CENTRIFUGE RADIUS EFFECTS ON ASTRONAUT PERFORMANCE OF ENTRY TASKS FROM APOLLO ENTRY SIMULATION TESTS A68-38088

MIGULINA, M. A.
INCREASED TEMPERATURE RESISTANCE OF HUMAN ORGANISM BY TRAINING A68-38297

MIKHAILOV, V. I.
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

GASEOUS TOXIC SUBSTANCES LIBERATED BY HUMAN URINE AT 38 C AND BY SAMPLES STORED AT 18 TO 20 C A68-38315

GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE

ON CHLORELLA PHOTOSYNTHETIC ACTIVITY
A68-38322

MIKSL, R.
CRITICAL FLICKER FUSION FREQUENCY USED AS A METHOD OF DETERMINATION OF EFFECT OF GLARE IN MAN
A68-81904

MILLER, A. L.
EFFECTS OF SHAPE, SIZE, HETEROGENEITY, AND INSTRUCTIONAL SET ON JUDGMENT OF VISUAL NUMBER
A68-81822

MILNER, A.
HYDROXYPROLINE EXCRETION IN OBESE HUMANS DURING STARVATION
A68-81844

MINKOVSKI, L.
PILOT RESISTANCE TO RADIAL ACCELERATION - STUDY CARRIED OUT BY BULGARIAN AIR FORCE
A68-81898

MINTZ, D. H.
EFFECT OF ALTERED THYROID FUNCTION ON CALCIUM AND PHOSPHORUS CIRCADIAN RHYTHMS IN HUMANS
A68-81827

MIROLIUBOV, G. P.
DECELERATION EFFECT ON MAN DURING CABIN LANDING, CONSIDERING SHOCK ABSORBERS DAMPING PROPERTIES, BODY POSITION AND WIND DRIFT RATE
A68-38221

MIRONOV, N. V.
GROWTH OF TILAPIA FISH KEPT ON DRY CHLORELLA DIET COMBINED WITH OTHER FODDER
A68-38326

MIRONOVA, N. V.
TILAPIA FISH AS POSSIBLE COMPONENT OF SPACECRAFT LIFE SUPPORT SYSTEMS
A68-38324

GROWTH OF TILAPIA FISH KEPT ON NORMAL ANIMAL, MIXED AND VEGETABLE FOOD
A68-38325

MISHCHENKO, V. S.
CHANGES IN RESPIRATION, OXYGEN TRANSPORT FUNCTION OF BLOOD AND OXYGEN PARAMETERS OF YOUNG HUMANS DURING HYPOXIA
A68-81872

MITCHELL, J. F.
RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION
A68-81897

MITIUSHOV, M. I.
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS
A68-38301

MIURA, T.
OPTIMAL ROOM TEMPERATURE FOR LIGHT PHYSICAL EXERCISE AND MENTAL PERFORMANCE
A68-81892

MOISEEV, A. A.
ARTIFICIAL WATER REGENERATION CYCLES FOR WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS
A68-38308

MOLNAR, L.
CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT
A68-81962

MONTY, R. A.
SPATIAL VISUAL ENCODING STRATEGIES IN SEQUENTIAL SHORT-TERM MEMORY
A68-81973

MOORE, J. W.
GENERALIZATION EFFECTS IN HUMAN DISCRIMINATION LEARNING WITH OVERT AUDITORY AND VISUAL CUE IDENTIFICATION
A68-81970

MOORE, R. S.
NA TRANSPORT BY RENAL LYMPHATICS DURING ELEVATED CENTRAL VENOUS PRESSURES, NOTING NA RETENTION AND CONGESTIVE HEART FAILURE
A68-38663

MOORE, W. F.
RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN
SAM-TR-68-33
N68-31396

MORALI-DANINOS, A.
CIRCADIAN RHYTHM EXISTENCE FOR PSYCHOLOGICAL PHENOMENA
A68-38901

MORI, K.
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY
A68-38771

MOROZOV, V. S.
ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS
A68-38255

SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION
A68-38260

MOROZOVA, R. M.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS
A68-38300

MOSES, R.
CONTRIBUTION OF EXERCISE TO CIRCADIAN RHYTHM IN EXCRETION OF MAGNESIUM AND CALCIUM
AM-68-4
N68-33067

MOSHARRAFA, M. A.
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT
NASA-CR-92220
N68-32973

MOYER, J. E.
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS
A68-39325

MOYER, R. W.
INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH USE OF COMPUTER TECHNIQUES
A68-81954

MUETZE, B.
BIOLOGICAL EFFECTS OF X RAY IRRADIATION ON MICROCOCCUS DENITRIFICANS
N68-32136

MUKHINA, A. P.
DOGS STOMACH AND DUODENUM PERIODIC MOTOR ACTIVITY CHANGES AFTER EXPOSURE TO ACCELERATION FORCES
A68-38245

MURAKHOVSKII, K. I.
X RAY PHOTOGRAPHS OF HUMAN THORAX DURING ACCELERATIONS OF VARIOUS MAGNITUDES AND DIRECTIONS, ANALYZING CHEST FLATTENING, DIAPHRAGM POSITION AND MEDIASTINAL ORGANS
A68-38237

MURPHY, R.
EVALUATION OF THREE APPROACHES TO FIGURAL ORGANIZATION USING PAIRED-ASSOCIATES DISCRIMINATION-LEARNING TASK VARYING IN COMPLEXITY
A68-81819

MURPHY, W. W.
INCREASED CREW ACTIVITIES SCHEDULING EFFECTIVENESS THROUGH USE OF COMPUTER TECHNIQUES
A68-81954

MUTSCHALL, V.
METHODS AND RESULTS OF EARLY AND RECENT SOVIET THEORETICAL AND EXPERIMENTAL RESEARCH IN TELEPATHY
N68-32035

MYERS, J. L.
TWO-CHOICE DISCRIMINATION LEARNING AS FUNCTION OF VISUAL STIMULUS AND EVENT PROBABILITIES
A68-81969

N

NADTOCHIN, IU. V.
ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

NAGY, ZS.
CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE A68-81912

NAKASHIMA, T.
OLIGOPEPTIDE AND POLYPEPTIDE FORMATION UNDER PREBIOLOGICAL CONDITIONS, AND PRODUCTION AND CHARACTERIZATION OF SYNTHETIC POLYMERS N68-32146

NEAL, M. J.
RELEASE OF ACETYLCHOLINE FROM NERVE TERMINALS IN RABBIT CORTEX UNDER AUDITORY STIMULATION A68-81897

NEFEDOV, IU. G.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

NELSON, J. G.
WATER IMMERSION AND BODY POSITION EFFECTS ON HUMAN PERFORMANCE IN USE OF VESTIBULAR SENSE FOR GRAVITATIONAL VERTICAL PERCEPTION A68-38084

NEVILLE, E. D.
ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS A68-38518

NEWMAN, R. W.
COLD ACCLIMATION IN PUERTO RICANS A68-81859

NEWSOM, B. D.
FEASIBILITY AND DESIGN CONFIGURATION OF ORBITAL ONBOARD CENTRIFUGE FOR HUMAN PHYSIOLOGICAL EXPERIMENTS DURING APOLLO APPLICATIONS PROGRAM
NASA-CR-66649 N68-33296

NEWSOM, W. A.
RETINAL FLUORESCENCE ANGIOGRAPHY
SAM-TR-68-21 N68-32995

NIAUSSAT, P.
INVESTIGATION OF RADIATION RESISTANCE OF SOME LIVING ORGANISMS AND POSSIBLE PRACTICAL APPLICATION IN FIELD OF RADIATION PROTECTION A68-81888

NICHOLS, D. E.
SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

NICKERSON, R. S.
PSYCHOLOGICAL IMPORTANCE OF TIME IN TIME SHARING SYSTEM
BBN-1687 N68-31891

NICOLAS, M.-J.
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

NICOLETTI, B.
MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER A68-81813

NIKIFOROVA, E. N.
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

NIKITINA, G. M.
HYPOXIA INCREASE RATES EFFECTS ON VEGETATIVE FUNCTIONS AND BIOELECTRIC ACTIVITY OF BRAIN OF DEVELOPING RABBITS, NOTING ADAPTIVE REACTION A68-38290

NIKONOVA, V. O.
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

NILOVSKAIA, N. T.
AIR AND WATER REGENERATION BY VEGETABLE PLANTS IN CLOSED VOLUME, STUDYING CARBON DIOXIDE ASSIMILATION AND WATER TRANSPIRATION RATES A68-38329

NISHIKAWA, S.
STREPTOMYCETES ISOLANTS FROM CHILE, MEXICO, AND ARIZONA DESERT SOILS
NASA-CR-96470 N68-33066

NIVEN, J. I.
ACCELEROMETER FOR AIRBORNE MEASUREMENTS OF VESTIBULAR FORCES ACTING ON HELICOPTER PILOTS
NASA-CR-96296 N68-32733

NOBLE, M.
MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

NODAR, R. H.
INVESTIGATION OF AUDITORY EVOKED RESPONSES OF NORMAL AND MENTALLY RETARDED ADULTS DURING SLEEP AND WAKEFULNESS USING ELECTROENCEPHALOGRAPHIC AUDIOMETRY A68-81941

NORDGREN, L.
NEW METHOD FOR TESTING ISOMETRIC MUSCLE STRENGTH OF HUMANS UNDER STANDARDIZED CONDITIONS A68-81893

NORMAN, A.
CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

NOSOKIN, L. V.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

O

OHBA, N.
VISUALLY EVOKED RESPONSES IN HUMANS BY LOCALIZED RETINAL STIMULATION A68-81920

OLLER, R. G.
VOCABULARY AND THESAURUS TECHNIQUES APPLIED TO USER-ORIENTED COMPUTERIZED DATA HANDLING SYSTEM
AMRL-TR-67-211 N68-31793

OLSHANSKII, V. F.
ACUTE RENAL INSUFFICIENCY IN ACUTE INTOXICATION WITH CARBON TETRACHLORIDE IN HUMANS A68-81876

OLSON, R. S.
RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34 N68-32088

ONISHCHENKO, V. F.
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

ORLOVA, T. V.
MUSCULOSKELETAL CHANGES IN CHRONIC INTOXICATION WITH AGENTS OF BENZOL SERIES A68-81873

ORO, J.
OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS

SPECTROMETRY A68-38525

OSIUMI, Y.
THYROID FUNCTION TEST BY MEANS OF WHOLE BODY LINEAR SCANNING FOR TRACES OF IODINE 131
NSJ-TR-120 N68-31392

OTTOMAN, R. E.
CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

P

PAKITSKAIA, V. V.
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

PANCHENKOVA, E. F.
VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

PANOV, A. N.
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

PARASOCHKO, L. A.
MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

PARKER, J. F., JR.
HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

PARKS, T. E.
SPATIAL SEPARATION OF TWO LIGHT-FLASHES AND THEIR PERCEIVED SEPARATION IN TIME A68-81823

PASQUET, J.
TRANSATLANTIC FLIGHT EFFECTS ON CIRCADIAN RHYTHM A68-38900

PASTUSHENKO, L. V.
USE OF HYDROQUININE FOR PREVENTION AND TREATMENT OF OXYGEN DEFICIENCY IN CATS A68-81870

PATTERSON, G. W.
STEROL BIOSYNTHESIS PATHWAYS IN CHLORELLA ELLIPSOIDEA, DISCUSSING FUCOSTEROL CONVERSION TO CLIONASTEROL A68-39267

PATTERSON, R. P.
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT
NASA-CR-92220 N68-32973

PAYSANT, P.
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS A68-82008

PAZAT, P.
NOISE TRAUMA AND RESULTING HEARING DEFICIENCIES CAUSED BY FIRE ARMS IN ARMY POPULATION A68-81887

PEGRAM, G. V.
CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

PENNOCK, B.
PARAMETRIC PERFORMANCE ANALYSIS OF OXYGEN TRANSPORT SYSTEM A68-81958

PEPPERS, N. A.
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

PERDRIEL, G.
CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

FREQUENCY OF OCCURRENCE OF ANISEIKONIA IN EMMETROPIC AND ISOMETRIC FLYERS A68-82014

PEREZ-CRUET, J.
METHODS AND TECHNIQUES FOR DETERMINING PSYCHOCARDIOVASCULAR REACTIONS DURING CONDITIONS OF WEIGHTLESSNESS IN ORBITING SATELLITE
NASA-CR-96450 N68-33333

PERSON, R. S.
ELECTROMYOGRAMS IN RELATION TO SYNCHRONIZATION OF MOTOR NEURONS IN HEALTHY AND DISEASED PERSONS A68-81940

PESTOV, I. D.
IRRITATION CUMULATION DURING MOTION SICKNESS BY VOMITORY CENTER A68-38227

PETRAS, E.
CRITICAL ANALYSIS OF PANSPERMIA THEORY IN VIEW OF RECENT SPACE FLIGHT DEVELOPMENTS N68-32139

PETREK, J.
CORTICAL RESPONSE AMPLITUDE CHANGES PRODUCED BY RHYTHMIC ACOUSTIC STIMULATION IN CATS A68-81913

PETROVYKH, V. A.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

PETRUKHIN, V. G.
CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

PATHOMORPHOLOGICAL CHANGES UNDER RADIAL ACCELERATIONS IN HEAD/LEG DIRECTION A68-38242

IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

PETSCHE, H.
SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS A68-81935

PETTYJOHN, F. S.
FLIGHT SURGEONS DUTIES IN UNITED STATES ARMY AVIATION MISSIONS IN REPUBLIC OF VIETNAM A68-81839

PETYREK, P.
WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION A68-81838

PHANG, J. M.
EFFECT OF DIVIDED CALCIUM INTAKE ON URINARY CALCIUM EXCRETION IN HUMANS A68-81841

PHILLIPS, J. M.
RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN
SAM-TR-68-33 N68-31396

PICKENHAIN, L.
EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING AS AFFECTED BY OPTIC STIMULI A68-81993

PIERCE, A. K.
EXERCISE AND REST VENTILATORY PATTERNS IN NORMAL SUBJECTS AND PATIENTS WITH AIRWAY OBSTRUCTION A68-81855

PINGANNAUD, P. M.
HYPOXIA AND HYPEROXIA EFFECTS ON GLYCEMIA IN

RABBITS, NOTING REPETITIVE BLOOD SUGAR VARIATIONS A68-38893

PLANTE, G. E.
EFFECT OF STARVATION ON METABOLIC BALANCE IN MONGREL AND DALMATIAN DOGS A68-81850

PODDUBNAIA, L. T.
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

GASEOUS TOXIC SUBSTANCES LIBERATED BY HUMAN URINE AT 38 C AND BY SAMPLES STORED AT 18 TO 20 C A68-38315

POEPPEL, E.
INTER AND INTRA-INDIVIDUAL DESYNCHRONIZATION AND BEHAVIOR STUDIED IN ISOLATED GROUP EXPERIMENT N68-32151

POGATINA, L. N.
GASEOUS TOXIC PRODUCTS GIVEN OFF BY HUMAN FECES STUDIED FOR COMPOSITION IMMEDIATELY AFTER DISCHARGE OR DURING STORAGE A68-38314

POLIAKOV, B. I.
HUMAN VEGETATIVE REACTIONS UNDER ANGULAR ACCELERATIONS NOTING NO DEPENDENCE ON MAGNITUDE A68-38224

POLIVODA, A. I.
COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS JPRS-46173 N68-32901

POMPEIANO, O.
INHIBITORY EFFECTS EVOKED THROUGH VENTRAL RETICULOSPINAL PATHWAYS DURING ELECTRIC STIMULATION OF CAUDAL BRAIN STEM IN DECEREBRATED CATS A68-81960

PONNAMPERUMA, C.
THEORY AND EXPERIMENTAL PROGRAM IN SUPPORT OF CHEMICAL APPROACH TO LIFE ORIGIN AND EVOLUTION N68-32144

PONOMARKOV, V. I.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

POPKOV, V. L.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

POPOV, I. G.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

POPOV, V. A.
RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

POPOV, V. I.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

POPOVA, E. O.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

PORTERFIELD, J.
MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

POTKIN, V. E.
DOGS STOMACH AND DUODENUM PERIODIC MOTOR ACTIVITY CHANGES AFTER EXPOSURE TO ACCELERATION FORCES A68-38245

ROLE OF SMALL INTESTINE IN CONTROLLING BLOOD CHOLESTEROL LEVEL UNDER TRANSVERSE RADIAL ACCELERATIONS A68-38246

ROLE OF CENTRAL NERVOUS SYSTEM IN CONTROLLING SECRETORY ACTIVITY OF SMALL INTESTINE AFTER PROLONGED EXPOSURE TO TRANSVERSE ACCELERATION A68-38247

POWELL, F. D.
NONLINEAR PREPROCESSING AND CASCADING TO IMPROVE DISCRIMINATION CAPABILITY OF LINEAR SINGLE GAIN LEARNING SYSTEMS REPT.-9500-920089 N68-31363

PREYSS, A. E.
HUMAN LEARNING BEHAVIOR THEORY IN MANUAL CONTROL TASK MODELED AS COMPUTER PROGRAM NASA-CR-1124 N68-31911

PRICE, G. T.
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

PRICE, W. M.
AUTONOMIC NERVOUS SYSTEM AND PHYSIOLOGIC THERMOREGULATION OF BODY TEMPERATURE A68-81831

PRITCHARD, R.
CORTICAL CONDITIONS FOR FUSED BINOCULAR VISION IN HUMANS AND CATS A68-81991

PRPIC-MAJIC, D.
LEAD CONCENTRATIONS IN CEREBROSPINAL FLUID IN PATIENTS EXPOSED TO LEAD POISONING FROM SOURCES INCLUDING TETRAETHYL LEAD A68-81878

Q

QUEMERCH, R.
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

R

RABKIN, B. M.
CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

RABOUTET, J.
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

RADCHENKO, N.
FOOD RATIONS FOR ASTRONAUTS ON LONG DURATION SPACE FLIGHTS JPRS-46002 N68-31511

RAEVSKAIA, S. A.
JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

RAMKOVA, N. V.
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION

PROCEDURES A68-38310

RATNER, G. S.
HETEROTROPHIC ORGANISMS AS HUMAN NUTRITION SOURCE IN PROLONGED SPACE FLIGHTS A68-38307

RAUCHFUSS, H.
THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

RAWSON, R. O.
EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

RAZGOVOROV, B. L.
ABDOMINAL ORGANS PARTIAL SCREENING EFFECTS ON POSTRADIATION RECOVERY RATE IN MALE WHITE MICE AND MALE AND FEMALE RATS A68-38255

SURVIVAL RATE OF RATS FULLY EXPOSED TO GAMMA IRRADIATION WITH APPLICATION OF STOMACH SHIELD, COMPARING SHIELDING WITH PHARMACOCHEMICAL RADIATION PROTECTION A68-38260

REGAN, D.
REVIEW OF CURRENT WORK ROLE OF EVOKED POTENTIALS OF BRAIN IN VISUAL PERCEPTION A68-81894

REILLY, R. E.
HEAT STRESS AND PROLONGED ACTIVITY EFFECTS ON HUMAN PERCEPTUAL MOTOR PERFORMANCE
NASA-CR-1153 N68-31480

REINBERG, A.
BIOLOGICAL RHYTHMS IN MAN, ANIMALS AND PLANTS A68-38902

REITE, M. L.
CORTICAL TEMPERATURE OF MONKEYS, MACACA MULATTA, DURING WAKEFULNESS AND SLEEP A68-81938

REKOSH, J. H.
COMPENSATION FOR DISPLACED VISION AND INTERSENSORY CONFLICT AS FACTOR IN ADAPTATION N68-32259

REYNOLDS, O. E.
N ASA PROGRAM OUTLINE ON RESEARCH AND DEVELOPMENT RELATED TO BIOLOGICAL SPACE EXPLORATION N68-32132

RICCIO, D. C.
RESPONSE SUPPRESSION PRODUCED BY VESTIBULAR STIMULATION IN RATS A68-81933

RICHARDS, A. M.
MONAURAL METHOD TO DETERMINE PSYCHOLOGICAL LOUDNESS FUNCTION UNDER EXTERNAL NOISE CONDITION
SMRL-509 N68-31925

RICHARDS, W.
VISUAL SUPPRESSION DURING PASSIVE EYE MOVEMENT COMPARED TO ACTIVE EYE MOVEMENT TO DETERMINE ORIGIN AS RETINAL OR CENTRAL A68-39106

RICHMOND, D. R.
LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064 N68-32659

RICHTER, C. R.
RADIO FREQUENCY SIGNAL STRENGTH MEASUREMENTS ON TRANSMITTER IMPLANTED IN MONKEY ABDOMEN
SAM-TR-68-33 N68-31396

RICKETTS, C. R.
EFFECT OF MICROWAVE RADIATION AT X BAND ON BIOCHEMISTRY OF GUINEA PIG SKIN IN TISSUE CULTURE A68-81929

RIPPERTON, L. A.
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

RISI, S.
THEORY AND EXPERIMENTS ON FORMATION OF AMINO ACIDS AND PEPTIDES THROUGH RADIATION IN BIOLOGICAL EVOLUTION N68-32145

RITTER, W.
ELECTROMYOGRAPHIC AND ELECTROENCEPHALOGRAPHIC RESPONSES OF HUMANS PERFORMING VARIOUS MOTOR TASKS A68-81934

ROBERTSON, W. D.
SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

ROBERTSON, W. G.
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE A68-38083

RODRIGUEZ, L. L.
EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

ROEBUCK, J. A., JR.
INTEGRATED SYSTEM OF MOBILITY NOTATION AND STANDARD TECHNIQUES FOR MEASUREMENT OF SPACESUIT MOBILITY A68-81957

ROESCH, W. C.
HIT THEORY AND MICRODOSIMETRY APPLIED TO RELATIVE BIOLOGICAL EFFECTIVENESS PROBLEM
BNWL-SA-1753 N68-31666

ROGATINA, L. N.
CHEMICAL PREPARATIONS FOR PRESERVATION OF FECES UNDER CONDITION OF SPACE FLIGHT A68-38316

ROGERS, E. G.
MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING RESPONSES
ARL-TR-68-4 N68-32814

ROGGE, J. D.
AUTOMATIC SYSTEM FOR INDIRECT DETERMINATION OF HUMAN ARTERIAL BLOOD PRESSURE
SAM-TR-68-25 N68-31808

ROGOVENKO, E. S.
HUMAN METHOD OF ORGANIZING ACTIVITY, DISCUSSING DECISION MAKING FOR NEXT ACTION WHILE ESTIMATING PRECEDING ACTIONS WITH SIMULTANEOUS CONSIDERATION OF INSTANTANEOUS SIGNAL A68-38273

HUMAN ORGANIZATION OF SYSTEM OF ACTIONS WITH RANDOM ALTERNATION OF SIGNALS AND SEARCH AND CHOICE OF ACTIONS A68-38274

ROGULJIC, A.
METHOD OF QUANTITATIVE DETERMINATION OF EPINEPHRINE AND NOREPINEPHRINE IN URINE A68-81865

ROKOTOVA, N. A.
EXPERIMENTS AND ASSOCIATED HYPOTHESES CONCERNING METHODS OF ORGANIZING HUMAN MOTOR ACTIVITY A68-38270

EXPERIMENTAL PROGRAM TO STUDY ORDERED SEQUENCES OF ACTION WITH LIKE MOTIVE ACT SETS, SAME NUMBER OF ELEMENTS AND DIFFERING IN GROUP DIMENSIONALITY A68-38271

ADULT NERVOUS SYSTEM INCORPORATES DESCRIPTION OF TIME INTERVAL SETS FOR AUTOMATIC CONTROL OF RATE OF MOTIONS, DISCUSSING ACCURACY OF ORGANIZED SEQUENCE OF MOTIONS A68-38272

EXPERIMENTS TO OBTAIN DATA CONCERNING CONTROL OF TIME CHARACTERISTICS OF HUMAN MOTIONS A68-38276

ROLSTON, R. F.
PROTECTIVE ARMOR AGAINST BULLETS FOR FLYING PERSONNEL A68-81815

ROMAN, J.
RAPID REDUCTION METHOD OF RHYTHM AND RATE INFORMATION IN LARGE SCALE ELECTROCARDIOGRAM MONITORING
NASA-TN-D-4751 N68-32100

ROMANOVA, I. A.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

ROMBACH, F.
CARDIOVASCULAR RESPONSE TO FATIGUE AND ADAPTATION OF PILOTS FLYING GLIDERS A68-82009

STUDY OF PSYCHOMOTOR PERFORMANCE OF PILOTS FLYING GLIDERS A68-82010

ROMBACH, M.
BIOCHEMICAL AND ENDOCRINE STUDY OF FATIGUE AND ADAPTATION OF STUDENT GLIDER PILOTS A68-82008

ROOT, R. T.
METHOD OF EVALUATING LARGE NUMBERS OF SYSTEM ALTERNATIVES IN MAN MACHINE SYSTEM SITUATIONS A68-81947

ROSAN, R. C.
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

ROSE, C. M.
DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

ROSS, J. C.
EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

ROTA, P.
THERMAL CHARACTERISTICS OF SPACE FLIGHT AND PRINCIPLES OF HEAT REGULATION, DISCUSSING SPACE VEHICLE PROTECTION AND CLOTHING A68-37239

ROUNDS, D. E.
RUBY LASER ENERGY EFFECTS ON FUNCTIONAL ACTIVITY OF HUMAN IRIS
SAM-TR-68-34 N68-32088

RUBINSTEIN, L.
SIDE TO SIDE HEAD VIBRATION EFFECTS ON VISUAL ACUITY MEASUREMENTS
NASA-CR-96466 N68-33093

RUSIN, V. IA.
ROLE OF VARIOUS PARTS OF NERVOUS SYSTEM AND ENDOCRINE GLANDS IN DEVELOPMENT OF SPECIFIC AND NON-SPECIFIC RESISTANCE OF RATS A68-81943

RYBAKOV, N. I.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

RYTHER, J. H.
BIOLOGY AND ECOLOGY OF INVERTEBRATE AND ALGAE AQUACULTURES
PB-177767 N68-31737

RYZHOV, N. I.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

S

SABA, T. M.
INVOLVEMENT OF OPSONIC SYSTEM IN STARVATION INDUCED DEPRESSION OF RETICULOENDOTHELIAL SYSTEM IN RATS A68-81909

SADACCA, R.
METHOD OF EVALUATING LARGE NUMBERS OF SYSTEM ALTERNATIVES IN MAN MACHINE SYSTEM SITUATIONS A68-81947

SAKANO, N.
EVOKED RESPONSE AND STARTLE BLINK TO STRONG ACOUSTIC STIMULI OF DIFFERENT SIGNAL MEANING AS AFFECTED BY OPTIC STIMULI A68-81993

SAKSONOV, P. O.
VIBRATION AND ACCELERATION EFFECT ON ANIMALS EXPOSED TO VARIOUS GAMMA, PROTON AND X RAY RADIATION DOSES, TABULATING LIFETIME, SURVIVAL RATE AND MORTALITY DATA A68-38252

SAKSONOV, P. P.
IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

PERMISSIBLE IONIZING RADIATION DOSES ESTIMATION OF WHITE MICE SUBJECTED TO G FORCES, NOTING SURVIVAL RATE DEPENDENCE ON DOSES A68-38259

SALATSINSKAIA, E. N.
HUMAN RESPIRATORY SYSTEM REACTIONS TO OXYGEN DEFICIENCY AND EXCESS CARBON DIOXIDE IN INHALED GAS MIXTURE A68-38285

SALVAGNIAC, A.
STATISTICAL STUDY OF SKULL TRAUMATISMS AND MEDICAL STANDARDS OF FLIGHT FITNESS A68-82007

CASE HISTORY OF OCULAR INJURIES SUFFERED BY JET PILOT AFTER EJECTION A68-82012

SALVAGNIAC, J.
STATISTICAL STUDY OF FLIGHT FITNESS PATHOLOGY FOR PROFESSIONAL PILOTS, TECHNICAL AND NONTECHNICAL FLYING PERSONNEL, NOTING CARDIOVASCULAR DISORDERS A68-38895

SALVATORE, S.
ESTIMATION OF VEHICULAR VELOCITY AS FUNCTION OF VISUAL STIMULATION A68-81950

SASAKI, M. S.
CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

SASAKI, R. M.
AMINO ACID SEQUENCE DETERMINED FROM DIGESTS OF SPINACH FERREDOXIN, NOTING SIMILARITY TO BACTERIAL FERREDOXINS A68-38519

SAVCHENKOV, M. F.
SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

SAVIN, B. M.
CORTICAL-RETINAL DISTURBANCES IN OPTICAL ANALYSOR DURING ACCELERATION A68-38223

CATS AND RABBITS OXYGEN CONTENT IN BRAIN TISSUES MEASURED UNDER G FORCES NOTING DEPENDENCE ON MAGNITUDE AND DIRECTION A68-38234

SAVINICH, F. K.
CONTAMINATION OF HUMAN BODY IN SIMULATED SPACECRAFT ENVIRONMENT STUDIED FOR SKIN SICKNESS AFTER PROLONGED CONFINEMENT A68-38311

SCANO, A.
SURVIVAL OF LIVING ORGANISMS IN SPACE VEHICLES STUDIED FROM RESULTS OF BIOLOGICAL EXPERIMENTS A68-37237

SCHLEGEL, H. G.
PROLONGED ORGANOTROPHIC GROWTH OF HYDROGENOMONAS H 16 IN CHEMOSTATS A68-81918

GROWTH PHYSIOLOGY OF NEW PHYLA OF OXYHYDROGEN GAS BACTERIA FOR USE IN CLOSED ECOLOGICAL SYSTEMS N68-32140

SCHNEIDER, H. J.
OLEFINS OF HIGH MOLECULAR WEIGHT IN MICROSCOPIC ALGAE, DISCUSSING HYDROCARBON COMPOSITION INVESTIGATION BY GAS CHROMATOGRAPHY MASS SPECTROMETRY A68-38525

SCHONFELD, G.
EFFECT OF STARVATION ON INCORPORATION OF LABELED PALMITATE AND FREE FATTY ACID COMPOSITION OF RAT MUSCLE A68-81910

SCHROEDER, D. J.
STIMULUS SIZE AND VIEWING DISTANCE EFFECTS ON DURATION OF ILLUSORY MOTION IN SPIRAL AFTEREFFECT
FAA-AM-68-10 N68-32920

SCHWABER, J. R.
USE OF MODIFIED BAROSPIRATOR TO DETERMINE AIRWAY RESISTANCE IN MAN A68-81862

SEMPLE, C. A.
SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

SERIS, H.
CARDIAC VARIATION MEASUREMENTS TO EVALUATE STRAIN IN PILOT PSYCHOMOTOR ACTIVITY A68-38894

SERXNER, J. L.
PSYCHIATRIC EXPERIENCE OF PHYSICIAN DURING EIGHT-WEEK POLARIS SUBMARINE PATROLS A68-81919

SEVERINGHAUS, J. W.
RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE A68-81851

IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE A68-81852

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS A68-81853

SEYLAZ, J.
CORRELATIONS AMONG SYSTEMIC BLOOD PRESSURE, CEREBRAL BLOOD FLOW, AND BRAIN ELECTRICAL ACTIVITY IN WAKING RABBIT A68-81962

SHADDUCK, R.
DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

SHALIAPINA, V. G.
ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

SHALOW, R.
NUTRITIONAL DEFICIENCIES AND POSSIBLE IMPROVEMENTS OF DIET OF GLIDER PILOTS A68-82011

SHASHKOV, V. S.
IONIZING RADIATION AND VIBRATION EFFECTS ON MICE HEMOPOIETIC ORGANS, DISCUSSING VARIOUS MANIFESTATIONS OF RADIATION SICKNESS A68-38251

SHATALOVA, A. A.
CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

SHCHELKUNOV, E. L.
CHANGES OF CATECHOLAMINE CONTENT IN BRAIN AND ADRENALS OF RATS DURING CHRONIC INTAKE OF AMINAZINE A68-81875

SHCHERBAKOV, K. K.
AUTOMATIC DATA PROCESSING SYSTEM FOR STUDIES OF HUMAN EXTERNAL RESPIRATION FUNCTION PERMITTING RESPIRATORY SYSTEM CONDITION CONTROL A68-38265

SHEPELEV, E. IA.
CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING TOLERANCE AND SYMPTOMS A68-38305

CONDENSED WATER UTILIZATION FROM MANNED CABIN ATMOSPHERE FOR DRINKING AND NUTRITION PURPOSES A68-38309

PHYSIOLOGICAL-ECOLOGICAL INVESTIGATIONS OF CHLORELLA CULTURES AS LINK IN CLOSED ECOLOGICAL SYSTEM A68-38319

SHEPELEV, E. LA.
GASEOUS IMPURITIES EFFECT IN INHABITED ATMOSPHERE ON CHLORELLA PHOTOSYNTHETIC ACTIVITY A68-38322

SHERREY, J. H.
VESTIBULAR EVOKED ACTIVITY IN AUTONOMIC MOTOR OUTFLOWS IN CATS ANESTHETIZED WITH CHLORALOSE AND EXPOSED TO ELECTRIC STIMULATION A68-81959

SHEVCHENKO, V. A.
GAMMA RAYS AND PROTONS EFFECT ON CHLORELLA SUSPENSIONS, NOTING SURVIVAL RATE AND MUTABILITY A68-38328

SHIMIZU, A.
EFFECTS OF AMPHETAMINE ON SLEEP-WAKEFULNESS CYCLE OF DEVELOPING KITTENS A68-81916

SHMELEVA, A. M.
HYPEROXIA EFFECTS ON ANIMAL ERYTHROPOIESIS DYNAMICS, NOTING PARTIAL OXYGEN PRESSURE INCREASE, DURATION OF EXPOSURE AND ORGANISM ADAPTABILITY A68-38295

SHOSTAK, V. I.
ROLE OF WATER-SALT METABOLISM IN ETIOLOGY AND PATHOGENESIS OF DECOMPRESSION SICKNESS IN MICE A68-81884

ELECTRICAL SENSITIVITY OF EYE EXPOSED TO INTENSIVE PHOTIC STIMULUS A68-81984

SIDNEV, G. V.
SENSITIVITY TO BENZOL TOXICITY OF MICE, RATS AND RABBITS OF DIFFERENT AGE GROUPS IN ACUTE AND SUBACUTE POISONING A68-81871

SIDOROV, A. N.
PHOTOCHEMICAL REACTIONS OF HYDROGENATION AND DEHYDROGENATION OF COMPOUNDS OF PORPHIN SERIES
RTS-4318 N68-32429

SIDOROV, O. IU.
MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

SIEGEL, S. M.
SPACE BIOLOGY, SURVEYING BASIC STRESS BIOLOGY A68-37064

SIFFRE, M.
RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

SILVERSTONE, J. T.
GASTRIC PRESSURES RECORDED BY TELEMETRIC METHODS IN FASTING HUMANS A68-81826

SILVESTROV, M. M.
RELIABILITY OF MAN IN MAN MACHINE SPACECRAFT CONTROL SYSTEM A68-38268

SIMPURA, S. F.
VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION A68-38293

SINHA, R.
VESTIBULAR CORIOLIS REACTION EFFECT ON HUMAN RESPIRATION AND BLOOD FLOW CHANGES FROM CENTRIFUGE TESTS WITH IMPOSED HEAD NODDING A68-38087

SINIAK, IU. E.
ARTIFICIAL WATER REGENERATION CYCLES FOR WATER SUPPLY OF CREW MEMBERS DURING SPACE FLIGHTS A68-38308

SISAKIAN, N. M.
SOVIET COLLECTION OF ARTICLES ON SPACE BIOLOGY, VOLUME 6, COVERING GRAVITATIONAL AND PHYSIOLOGICAL EFFECTS, HUMAN RESPONSE, ETC A68-38213

SIVACKI, J.
METHOD OF QUANTITATIVE DETERMINATION OF EPINEPHRINE AND NOREPINEPHRINE IN URINE A68-81865

SKRYPIN, V. A.
HIGH PRESSURE OXYGEN BREATHING TECHNIQUES AND TRAINING, PHYSIOLOGY AND HIGH ALTITUDE EMERGENCY DESCENT SURVIVAL A68-38288

SKVORTSOVA, T. A.
GROWTH OF TILAPIA FISH KEPT ON NORMAL ANIMAL, MIXED AND VEGETABLE FOOD A68-38325

SLEZIN, V. B.
ELECTRICAL STIMULATION OF SUBCORTICAL BRAIN FORMATIONS IN CATS AND EFFECT OF CHLORPROMAZINE AND TOPHRANIL ON BEHAVIORAL REACTIONS A68-81983

SLUIMER, P.
LITERATURE SURVEY OF AIR REGENERATION IN SEALED ENVIRONMENTS
TDCK-50963 N68-32451

SMALL, G. R.
EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

SMIRENNYI, L. N.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

SMITH, G. P.
GASTRIC PRESSURES RECORDED BY TELEMETRIC METHODS IN FASTING HUMANS A68-81826

SMITH, H. C.
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

SMITH, M. C.
REPETITION EFFECT AND SHORT-TERM MEMORY OF VISUAL STIMULI A68-81968

SMITH, R. E.
BROWN ADIPOSE TISSUE CALORIGENESIS RELATED TO TOTAL HEAT PRODUCTION OF RATS DURING ACUTE COLD EXPOSURE A68-39328

SNOW, C. C.
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

SNYDER, R. G.
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

SOFRONOV, N. S.
COMPARATIVE EVALUATION OF INFLUENCE EXERTED BY TRANQUILIZERS AND NARCOTICS ON HIGHER NERVOUS ACTIVITY OF DOGS A68-81867

SOKOLOVA, E. V.
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

ROLE OF CORTICOSTEROIDS IN REACTION OF THYROID GLAND AND BRAIN NORADRENALINE TO COLD STRESS IN RATS A68-81976

SOKOLOVA, M. M.
ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

SOLLAMI, B. J.
TEMPERATURE-ENTROPY DIAGRAM FOR 80-20 OXYGEN-NITROGEN SPACE CABIN ATMOSPHERE A68-37183

SOLOMON, S. S.
EFFECT OF STARVATION ON PLASMA IMMUNOREACTIVE INSULIN AND NONSUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS A68-81848

SOLOMONOFF, R. J.
INDUCTIVE INFERENCE RESEARCH
RTB-155 N68-32078

SORENSEN, S. C.
IRREVERSIBLE RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT HIGH ALTITUDE A68-81852

RESPIRATORY INSENSITIVITY TO ACUTE HYPOXIA PERSISTING AFTER CORRECTION OF TETRALOGY OF FALLOT IN HUMANS A68-81853

SORENSON, S. C.
RESPIRATORY SENSITIVITY TO ACUTE HYPOXIA IN MAN BORN AT SEA LEVEL LIVING AT HIGH ALTITUDE A68-81851

SPERANSKAIA, T. V.
REPEATED ACCELERATION EFFECT ON HISTOSTRUCTURE OF LIVER OF DOGS AFTER CENTRIFUGATION A68-38243

EFFECT OF ACCELERATIONS, MAXIMALLY ENDURABLE IN TIME, ON HISTOSTRUCTURE OF LIVER OF MONKEYS A68-38244

SPILIOTI, Z. I.
EFFECT OF ASCORBIC ACID ON OXIDATIVE PHOSPHORYLATION IN BRAIN MITOCHONDRIA OF RATS IN HYPOXIA A68-81975

SPOONER, C. E.
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY A68-38771

STAEHLER, F.
BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS N68-32134

STANETS, M. P.
EFFECTS OF DIET VARIATION ON SECRETORY FUNCTION OF SMALL INTESTINE
RTS-4530 N68-32764

STEARNER, S. P.
ENZYME RELEASE AND PROTECTIVE ACTION OF SOYBEAN TRYPSIN INHIBITOR IN EARLY RADIATION LETHALITY IN CHICK EMBRYO A68-81911

STEJSKAL, L.
CORRELATION BETWEEN JENDRASSIK AND VALSALVA MANEUVERS - MUSCULAR REACTIONS DURING RESPIRATION A68-81899

STEPANTSOV, V. I.
COORDINATION STRUCTURE CHANGES OF ELEMENTARY

HUMAN MOTIONS UNDER GRAVITATIONAL FIELD VARIATIONS FROM ZERO TO 2 G A68-38277

STERC, J.
SIGNIFICANCE CORTEX FOR TRAVELING PHENOMENON OF BRAIN WAVES IN RABBITS A68-81935

STERN, J. A.
STERILIZATION REQUIREMENTS FOR SPACE VEHICLES, DISCUSSING PLANETARY QUARANTINE CONSTRAINTS EFFECTS ON HARDWARE A68-38077

TASK COMPLEXITY, ELECTRODERMAL ACTIVITY, AND REACTION TIME IN HUMANS A68-81994

STERN, R. M.
COMPARATIVE STUDY OF SUBJECTIVE AND PHYSIOLOGICAL ADAPTATION BASED ON MEASUREMENTS OF GALVANIC SKIN RESPONSE TO ELECTRIC SHOCK AND AUDITORY NOISE
TR-25 N68-31335

STERNFELD, H., JR.
SUBJECTIVE RESPONSE TO FAR FIELD NOISE CHARACTERISTICS OF V/STOL AIRCRAFT SIZED TO CARRY 60 PASSENGERS OVER 500 MILE RANGE
NASA-CR-1118 N68-33009

STEWART, S. B.
SIMULATING LANDING APPROACH AND MANDATORY GO-ROUND PERFORMANCE FOLLOWING CONTROL AND DISPLAY SYSTEM FAILURE
SRDS-RD-68-12 N68-32749

STILINOVIC, L.
EVALUATION OF RAINSFORD- DAVIES SEMI-QUANTITATIVE TEST FOR DETERMINATION OF PHENOL IN URINE OF WORKERS EXPOSED TO BENZENE VAPOR A68-81877

STOHLMAN, F., JR.
DIFFERENCE IN ERYTHROPOIETIN PRODUCTION BETWEEN ANEMIC AND HYPOXIC MICE AT SIMULATED HIGH ALTITUDE A68-81905

STOLTZ, M.
DESIGN CRITERIA AND MATHEMATICAL MODEL FOR VAPOR DIFFUSION WATER RECLAMATION UNIT
NASA-CR-66637 N68-31243

STOLWIJK, J. A. J.
EFFECTS OF ADDITIONAL ENDOGENOUS HEAT ON ANIMAL ORGANISMS AND TISSUES
PB-176914 N68-31315

STRAW, R. N.
EFFECT OF SELECTED NEUROMUSCULAR BLOCKING AGENTS, GALLAMINE TRIETHIODIDE AND DECAMETHONIUM BROMIDE, AND SPINAL CORD TRANSECTION ON CORTICAL AFTER-DISCHARGE DURATION IN CATS A68-81942

STREIMER, I.
ENERGY CONSIDERATIONS AS DETERMINANTS OF SYSTEM DESIGN IN MAN MACHINE SYSTEMS A68-81953

STRELKOV, R. B.
MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

STREUFERT, S.
EFFECT OF INCREASING FAILURE ON RESPONSE RATE AND ITS COMPONENTS IN COMPLEX DECISION MAKING
TR-12 N68-31881

STRUGHOLD, H.
MARTIAN LIFE THEORIES, DISCUSSING NEAR GROUND ATMOSPHERE AND SURFACE LAYER OF LITHOSPHERE A68-37065

STRZHIZHOVSKII, A. D.
HIGH ENERGY PROTON AND CO 60 GAMMA IRRADIATION DOSE EFFECTS ON PHYSIOLOGICAL REGENERATION OF CORNEAL EPITHELIUM OF MICE A68-38257

CYTOLOGICAL ANALYSIS OF DAMAGE TO EPITHELIUM CELLS OF DUODENUM IN MICE SUBJECTED TO HIGH ENERGY PROTON IRRADIATION A68-38258

STUNKARD, A. J.
GASTRIC PRESSURES RECORDED BY TELEMETRIC METHODS IN FASTING HUMANS A68-81826

SUEDFELD, P.
ISOLATION, CONFINEMENT AND SENSORY DEPRIVATION EFFECTS ON ASTRONAUT PERFORMANCE DURING EXTENDED MANNED SPACE FLIGHTS USING THEORETICAL APPROACH A68-39682

SULIMO-SAMUILLO, E. K.
MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

SULIMO-SAMUILLO, Z. K.
ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

SULLIVAN, M. F.
CHRONIC RESTRAINT EFFECTS ON BODY WEIGHTS AND GASTROINTESTINAL MOVEMENTS OF RATS ON NORMAL, LOW FAT, AND HIGH DIETS WITH AND WITHOUT EXPOSURE TO COBALT 60
NASA-CR-73233 N68-31350

SVECHINSKY, V. B.
MODELING OF PHYSIOLOGICAL ADAPTATION PROCESSES ON ELECTRONIC COMPUTER
RTS-4419 N68-32510

CLOSED PROCESSES OF CONTROL AND AUTOREGULATION IN COMPLICATED BIOLOGICAL SYSTEMS
RTS-4420 N68-32581

SYCHKOV, M. A.
RELATIVE BIOLOGICAL EFFECTIVENESS OF 630 AND 50 MEV PROTONS AND 36 MEV C IONS ON LYSOGENIC BACTERIA E COLI K-12/GAMMA/ A68-38256

SYZRANTSEV, IU. K.
HYPODYNAMIA EFFECT ON NITROGEN METABOLISM AND MEANING OF PROPORTIONED PHYSICAL LOADS FOR CONSERVATION OF NITROGEN EQUILIBRIUM A68-38302

QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

T

TALARICO, K. S.
ADIPOSE TISSUES IN ALTERED LIPID METABOLISM OF RATS EXPOSED TO CENTRIFUGAL STRESS A68-38518

TAO, M.
EFFECT OF SOLVENT ON INACTIVATION OF TRANSFORMING DEOXYRIBONUCLEIC ACID, TOBACCO MOSAIC VIRUS, AND ITS NUCLEIC ACID BY ULTRAVIOLET RADIATION N68-33479

TARASOV, V. A.
CONTINUOUS 6328 ANGSTROM LASER RADIATION CYTOGENIC EFFECT ON ONION SPROUTS, NOTING STRUCTURAL CHROMOSOME ABERRATIONS A68-38045

TARDOV, V. M.
HUMAN REACTION TO HIGH RATE LANDING DECELERATION AND METHODS TO INCREASE RESISTANCE, ESTABLISHING LIMITS OF SATISFACTORY ENDURANCE A68-38220

TARUSOV, B. N.
RADIATION DAMAGE PATTERNS AND RBE IN ANIMALS BY IONIZING RADIATIONS WITH LINEAR ENERGY LOSSES, EVALUATING POSSIBLE HEALING PROCESSES A68-38253

TAUB, T.
EVALUATION OF THREE APPROACHES TO FIGURAL

ORGANIZATION USING PAIRED-ASSOCIATES DISCRIMINATION-LEARNING TASK VARYING IN COMPLEXITY A68-81819

TAYLOR, H. L.
BEHAVIOR ANALYSIS OF CONDITIONED SUPPRESSION OF AUDITORY THRESHOLD IN PRIMATES
ARL-TR-68-6 N68-32695

TEICHNER, W. H.
DIGITAL VASOMOTOR CONDITIONING WITH AUDITORY STIMULI AND THERMOREGULATION A68-81995

INTERACTION OF BEHAVIORAL AND PHYSIOLOGICAL STRESS REACTIONS - PROBLEMS AND APPROACHES TO STRESS RESEARCH A68-82000

TERENTEV, V. G.
HUMAN 30 DAY SECLUSION UNDER CONDITIONS OF LOW BAROMETRIC PRESSURE AND AT DIFFERENT OXYGEN PARTIAL PRESSURES, NOTING EFFECTS ON REFLEXES A68-38291

HEALTH DISORDER PROBABILITY OF SPACECRAFT CREW MEMBERS BASED ON DATA FOR MEMBERS OF SOVIET ANTARCTIC STATIONS A68-38317

TERPILOVSKII, A. M.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

TEWELL, J. R.
ASTRONAUT MOTION EFFECT ON PRECISE CONTROL OF SPACECRAFT ATTITUDE A68-37790

THACH, J. S., JR.
RESPONSE SUPPRESSION PRODUCED BY VESTIBULAR STIMULATION IN RATS A68-81933

THEIOS, J.
FINITE INTEGER MODELS FOR LEARNING IN INDIVIDUAL HUMANS A68-82004

THOMPSON, D. A.
HUMAN FREQUENCY RESPONSE IN PURSUIT TRACKING AS FUNCTION OF VISUAL FEEDBACK DELAY A68-81956

THOMPSON, E. C.
EFFECT OF LIMB VASCULAR OCCLUSION ON PULMONARY DIFFUSING CAPACITY DURING REST AND LEG EXERCISE IN HUMANS A68-81922

TIERNEY, M. S.
TERRESTRIAL MICROORGANISMS DEPOSITED ON MOON BY UNMANNED LUNAR PROBES
NASA-CR-96121 N68-31501

TIMBAL, J.
PHYSIOLOGICAL EFFECTS OF HEAT SHOCK AS DETERMINED BY SWEATING ONSET, MEASURING PHYSICAL PARAMETERS OF WEIGHT LOSS, SKIN, RECTAL, TYMPANIC AND BUCCAL TEMPERATURES A68-38896

RECTAL TEMPERATURE RHYTHM OF SUBJECT ISOLATED UNDERGROUND FOR SIX MONTHS A68-38898

ACTIVITY CYCLE RELATIONSHIP TO RECTAL TEMPERATURE RHYTHM IN CONSTRAINT-FREE ENVIRONMENT A68-38899

TIUNOV, L. A.
REVIEW OF SOVIET PAPERS CONCERNING AIR MEDIA STATE IN AIRTIGHT MANNED VOLUMES, DISCUSSING TOXICOLOGY OF POLYMER MATERIALS A68-39200

TODD, P.
INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

TOMASSI, F.
CONTINUOUSLY VARYING GRAVITATIONAL FIELD FOR STUDYING WEIGHTLESSNESS EFFECTS ON GROWTH AND DEVELOPMENT OF CREEPER PLANT A68-37242

TRAUGOTT, N. N.
PHARMACOLOGICAL ANALYSIS OF NERVOUS MECHANISMS OF TONAL AND VERBAL SIGNAL DISCRIMINATION UNDER CONDITIONS OF NOISE A68-81979

TREDICI, T. J.
RETINAL FLUORESCENCE ANGIOGRAPHY
SAM-TR-68-21 N68-32995

TREMOR, J. W.
WEIGHTLESSNESS EFFECT ON FERTILIZED FROG EGG ABILITY TO DIVIDE, DIFFERENTIATE AND DEVELOP NORMALLY A68-39268

TRIPPA, G.
MUTAGENICITY OF INGESTED OR INJECTED PSORALENE IRRADIATED WITH ULTRAVIOLET LIGHT ON DROSOPHILA MELANOGASTER A68-81813

TROIAN, S.
CENTRAL NERVOUS SYSTEM REACTION AND ADAPTATION TO STAGNANT ANOXIA /RADIAL ACCELERATION IN ONTOGENESIS/ A68-38236

TROSHIKHIN, G. V.
CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA A68-38284

TROUT, O. F., JR.
SIMULATION TECHNIQUES TO DEVELOP METHODS OF MANUAL PERFORMANCE OF EXTRAVEHICULAR AND INTRAVEHICULAR WORK IN SPACE
NASA-TM-X-61160 N68-33452

TRUMBO, D.
MOTOR PERFORMANCE OF TEMPORAL PURSUIT TRACKING TASKS AS FUNCTION OF SEQUENCE LENGTH AND COHERENCE A68-81964

TUCKER, R. P.
REVIEW OF EFFECTS OF SLEEP DEPRIVATION IN HUMANS A68-81843

TURVEY, M. T.
INFORMATION LOSS IN VISUAL PREPERCEPTUAL SYSTEM N68-32309

TYSIK, A. IU.
BIOLOGICAL EFFECT OF WIDE BAND INTENSIVE NOISE ON ANIMAL ORGANISM, INVESTIGATING RESPIRATORY SYSTEM AND ELECTROENCEPHALOGRAM AND ELECTROCARDIOGRAMS OF DOGS A68-38300

U

UDALOV, IU. F.
QUALITATIVELY DIFFERING DIETS EFFECTS ON HUMAN METABOLIC CHARACTERISTICS UNDER CONDITIONS OF LIMITED MOBILITY A68-38303

HUMAN METABOLISM SHIFTS AND NUTRITIONAL STATUS UNDER PROLONGED PERIODS IN SUPINE POSITION WITH SUBSEQUENT EXPOSURE TO OVERLOADS A68-38304

UGLOVA, N. N.
ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES A68-38232

NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA A68-38289

ULIANIN, IU. N.
GROWTH AND GAS EXCHANGE CHARACTERISTICS OF ALGA ANACYSTIS NIDULANS IN INTENSIVE CULTURE A68-38323

USHAKOV, A. S.
CHLORELLA, SCENEDESMUS AND OTHER ALGAL CULTURES ADDITION TO HUMAN FOOD RATIONS, DISCUSSING

TOLERANCE AND SYMPTOMS A68-38305

USHAKOVA, T. N.
MECHANISMS OF ATTENTION TO BOTH AUDITORY AND VISUAL STIMULI IN HUMANS A68-81985

V

VALYI-NAGY, T.
CORRELATION BETWEEN PHYSIOLOGICAL STATE OF ESCHERICHIA COLI AND RADIOPROTECTIVE EFFECTIVENESS OF CYSTEINE A68-81912

VAN GENDEREN, L.
RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM
SMRL-519 N68-31382

VAN STEE, E. W.
SODIUM FLUORIDE AND NITROGEN FLUORIDE 30 EFFECT ON GROWTH AND THYROID FUNCTION IN RATS
AMRL-TR-67-189 N68-33128

VANDERVEEN, J. E.
EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY A68-81825

VARENE, P.
GAS INERTANCE AND BAROMETRIC PRESSURE - MATHEMATICAL METHODS OF MEASUREMENT A68-82013

VARTBARONOV, R. A.
VOSTOK/ VOSKHOD ASTRONAUTS REACTIONS TO TRANSVERSE ACCELERATION IN SPACE AND IN CENTRIFUGE BY COMPARATIVE ANALYSIS A68-38216

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION A68-38293

VASHKOV, V. I.
SUPPRESSION OF BACTERIA IN CLOSED COMPARTMENTS FOR PROLONGED EXPERIMENTS WITH TEST SUBJECTS, DISCUSSING DECONTAMINATION AND STERILIZATION PROCEDURES A68-38310

VASILEV, P. V.
CARDIAC ACTIVITY DISTURBING MECHANISMS DURING TRANSVERSE ACCELERATION CORRELATED WITH GLYCOGEN CONTENT IN MYOCARDIUM A68-38217

TRANSVERSE ACCELERATION EFFECT ON ANIMALS VEGETATIVE NERVOUS SYSTEM, CONSIDERING REACTIONS INVOLVING ADRENALIN, ACETYLCHOLINE AND ELECTRICAL IRRITATION OF VAGUS A68-38218

ADAPTATION TO DECREASED OXYGEN PARTIAL PRESSURE EFFECT ON RESISTANCE TO TRANSVERSE G FORCES A68-38232

ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

NORMAL AND LOW PARTIAL OXYGEN PRESSURE PHYSICAL TRAINING EFFECTS ON WHITE MICE RESISTANCE TO TRANSVERSE ACCELERATIONS AND HYPOXIA A68-38289

REPEATED AND SINGLE HIGH ALTITUDE ACCLIMATIZATIONS EFFECT ON HUMAN RESISTANCE TO TRANSVERSE ACCELERATION A68-38293

PHYSIOLOGICAL ASPECTS OF USE OF HYPERTHERMIA IN SPACE MEDICINE STUDIED FROM EXPERIMENTS ON DOGS AND WHITE RATS A68-38318

VASILEVA, V. F.
ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

VASILEVA, V. M.
ELECTROPHYSIOLOGICAL STUDY OF CONDITIONED REACTIONS TO TIME IN HUMANS A68-81981

VASSILIADIS, A.
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

VAUGHAN, H. G., JR.
ELECTROMYOGRAPHIC AND ELECTROENCEPHALOGRAPHIC RESPONSES OF HUMANS PERFORMING VARIOUS MOTOR TASKS A68-81934

VELINOV, I.
ANALYSIS OF SOVIET EXPERIMENTS IN TELEPATHIC COMMUNICATION BASED ON FRAMEWORK OF INFORMATION AND COMMUNICATION THEORIES N68-32036

VENTTSEL, M. D.
CORRELATION ANALYSIS OF FELINE CEREBRAL CORTEX INDIVIDUAL NERVE ELEMENTS REACTION TO VESTIBULAR OTHOLITIC APPARATUS IRRITATION BY BOUNCING A68-38229

VEOMETT, R. C.
CHROMOSOME ABERRATIONS AS MEASURE OF X RAY AND GAMMA RAY DOSAGE AND EFFECTS ON HUMANS
SAM-TR-67-112 N68-31408

VINCENT, J.
HISTOLOGICAL DISTRIBUTION AND RETENTION OF LEAD, RADIOACTIVE SULFUR, AND RADIOACTIVE CALCIUM IN NEW COMPACT BONE SUBSTANCE
NASA-TT-F-11862 N68-31591

VINOGRADOV, V. M.
USE OF HYDROQUININE FOR PREVENTION AND TREATMENT OF OXYGEN DEFICIENCY IN CATS A68-81870

VODICKA, L.
WEIGHT CHANGES IN SUBMAXILLARY GLANDS OF UNPROTECTED AND CYSTAMINE PROTECTED RATS AFTER WHOLE BODY GAMMA RAY IRRADIATION AND ATTEMPT AT QUANTITATIVE INTERPRETATION A68-81838

VOELKER, W.
ULTRAVIOLET MERCURY RADIATION SOURCE DESIGNED FOR BIOLOGICAL SIMULATION EXPERIMENTS N68-32143

VOIGT, E. D.
REVIEW OF TEST RESULTS AND DIAGNOSTIC DATA ON RHYTHMOLOGICAL PROBLEMS OF AEROSPACE MEDICINE N68-32153

VOROBEVA, E. N.
MECHANISMS OF VASOCONSTRICTIVE ACTION AND DEVELOPMENT OF HYPOXIA IN ANIMAL TISSUES FOLLOWING MEXAMINE ADMINISTRATION A68-81869

VORONIN, G. I.
PHYSIOLOGICAL AND HYGIENIC REQUIREMENT OF LIFE SUPPORT SYSTEMS OF VOSTOK AND VOSKHOD SPACE SHIPS A68-38282

COMPARATIVE WEIGHT AND POWER CHARACTERISTICS OF LIFE SUPPORT SYSTEMS FOR SPACECRAFT CREWS
JPRS-46173 N68-32901

VORONIN, L. G.
ELECTROPHYSIOLOGICAL STUDY OF CONDITIONED REACTIONS TO TIME IN HUMANS A68-81981

VOTTA, F., JR.
HEAT AND MASS FLOW RATE THROUGH SEVERAL TYPES OF COMPOSITE CLOTHING UNDER SIMULATED CONDITIONS
TR-68-44-CM N68-32519

VYSOTSKII, V. G.
RADIATION SAFETY PROBLEMS OF LONG DURATION MANNED SPACE FLIGHTS, DISCUSSING GALACTIC COSMIC RAYS, VAN ALLEN RADIATION BELTS AND ARTIFICIAL NUCLEAR EXPLOSIONS A68-38261

JUSTIFYING ADMISSIBLE DOSES OF GALACTIC COSMIC, RADIATION BELT AND SOLAR FLARE RADIATION, DISCUSSING ACCIDENTAL IRRADIATION AND HIROSHIMA-NAGASAKI VICTIMS A68-38262

W

WAITE, C. L.
RAPID RECOMPRESSION HIGH PRESSURE OXYGENATION TREATMENT OF TRAUMATIC CEREBRAL AEROEMBOLISM
SMRL-519 N68-31382

WALKER, C. A.
CIRCADIAN RHYTHMS IN RAT MIDBRAIN AND CAUDATE NUCLEUS BIOGENIC AMINE LEVELS A68-81988

WARD, C. H.
DIALYZABLE AND NONDIALYZABLE CHLORELLA PYRENOIDOSA CULTURE FILTRATES ANALYZED TO IDENTIFY EXCRETORY PRODUCTS A68-39325

WEISS, A. D.
NEUROLOGICAL ASPECTS OF DIFFERENTIAL DIAGNOSIS OF VERTIGO A68-81812

WELSH, J. D.
EFFECT OF NONLACTOSE DIET ON HUMAN INTESTINAL DISACCHARIDASE ACTIVITY A68-81825

WEST, D. C.
VISIBILITY OF FLICKERING STABILIZED RETINAL IMAGE IN HUMANS A68-81836

WEVER, R.
INSULATED-LABORATORY TESTS OF EFFECTS OF WEAK TERRESTRIAL ELECTROMAGNETIC RADIATION ON CIRCADIAN PERIODICITY OF MAN N68-32150

WHITE, C. S.
LABORATORY TESTS ON RELATION BETWEEN EARDRUM FAILURE IN ANIMALS AND HIGH EXPLOSIVE BLAST OVERPRESSURES
DASA-2064 N68-32659

WHITE, C. T.
EFFECTS OF CONTOUR SHARPNESS AND CHECK SIZE ON VISUALLY EVOKED CORTICAL POTENTIALS A68-81835

WHITE, W. J.
MANNED ORBITAL LABORATORY CENTRIFUGE RADIUS EFFECTS ON ASTRONAUT PERFORMANCE OF ENTRY TASKS FROM APOLLO ENTRY SIMULATION TESTS A68-38088

WHITTEN, B. K.
EFFECT OF 14,000 FT ALTITUDE ON PROTEIN METABOLISM IN HUMANS A68-81845

WILLIAMS, R. H.
EFFECT OF STARVATION ON PLASMA IMMUNOREACTIVE INSULIN AND NONSUPPRESSIBLE INSULIN-LIKE ACTIVITY IN NORMAL AND OBESE HUMANS A68-81848

WILLIS, H. R.
HUMAN ERRORS ARISING IN MANNED AIRCRAFT SYSTEMS, INVESTIGATING EFFECTS OF FATIGUE, MICROSLEEP, PSYCHOLOGICAL CAUSES, ETC A68-38510

WILSON, G. L.
MATCH TO SUCCESSIVE SAMPLE DEVICE SYSTEM FOR ADMINISTERING PROBLEMS TO PRIMATES AND RECORDING RESPONSES
ARL-TR-68-4 N68-32814

WINCHELL, H. S.
INHIBITION OF COLONY FORMATION BY CULTURED HUMAN CELLS UNDER AERATED AND ANOXIC CONDITIONS A68-39326

WINTERS, W. D.
ANESTHESIA STAGES INDUCED BY PENTOBARBITAL, HALOTHANE, ETHER OR NITROUS OXIDE, RECORDING EEG, GROSS BEHAVIOR, AUDITORY EVOKED RESPONSE AND MULTIPLE UNIT ACTIVITY A68-38771

WITSOE, D. A.
FOUR ELECTRODE IMPEDANCE PLETHYSMOGRAPHIC SYSTEM FOR MEASURING LEFT VENTRICULAR OUTPUT
NASA-CR-92220 N68-32973

WORDEN, F. G.
FREQUENCY-FOLLOWING MICROPHONIC-LIKE NEURAL RESPONSES EVOKED BY SOUND IN CATS A68-81939

WORTH, J. J. B.
OZONE CONCENTRATION AND VARIATION ON PIKES PEAK FOR PULMONARY EDEMA RESEARCH
AD-670989 N68-31035

WORTZ, E. C.
SIMULATED LUNAR GRAVITY EFFECTS ON HUMAN METABOLIC RATES IN FULL PRESSURE SUITS DURING PHYSICAL EXERCISE A68-38083

WOSTMANN, B. S.
LOWERED CARDIAC OUTPUT AND OXYGEN CONSUMPTION AND ENLARGED CECUM IN GERMFREE RATS A68-81906

WRIGHT, J. H.
REACTION TIME IN DETECTION OF VIBROTACTILE SIGNALS A68-81972

WURTMAN, R. J.
METABOLIC TRANSFORMATIONS OF NOREPINEPHRINE AND DRUGS AFFECTING THESE PROCESSES IN AUTONOMIC NERVOUS SYSTEM A68-81833

DAILY RHYTHMS IN CONCENTRATIONS OF VARIOUS AMINO ACIDS IN HUMAN PLASMA A68-81895

Y

YAGER, D.
ALPHA BLOCKING IN HUMANS DURING VISUAL AFTERIMAGES AS RELATED TO ATTENTION A68-81936

YOUNG, J. W.
PATHOLOGY OF TRAUMA ATTRIBUTED TO RESTRAINT AND EJECTION PROTECTION SYSTEMS IN AIRCRAFT AND MANNED SPACE VEHICLE CRASH IMPACTS A68-38085

YOUNG, L. R.
HUMAN DYNAMIC SPACE ORIENTATION USING TECHNIQUES OF CONTROL THEORY
NASA-CR-96290 N68-33241

YOUNG, R. S.
WEIGHTLESSNESS EFFECT ON FERTILIZED FROG EGG ABILITY TO DIVIDE, DIFFERENTIATE AND DEVELOP NORMALLY A68-39268

YOUSEF, M. K.
SIMULTANEOUS RECORDING OF HAMSTER OXYGEN CONSUMPTION AND ABDOMINAL CAVITY TEMPERATURE DURING HIBERNATION CYCLE A68-38994

YUWILER, A.
BIOCHEMICAL AND BEHAVIORAL EFFECTS OF MAGNESIUM PEMOLINE IN SHOCK AVOIDANCE SITUATION IN RATS A68-81917

Z

ZAALISHVILI, I. S.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

ZAGRIADSKII, V. P.
ORGANISM RESISTANCE VARIATION TO G FORCES AFTER PROLONGED ACTION OF LOW CONCENTRATIONS OF CARBON DIOXIDE A68-38233

MEANS OF REDUCING TOXIC EFFECT OF CARBONIC ACID ON ORGANISM A68-38296

ZAKHAROV, S. V.
ACTION OF STELAZINE ON OXYGEN CONSUMPTION AND GLYCOLYTIC ACTIVITY IN BRAIN TISSUES OF RATS A68-81874

ZAKS, M. G.
ACCELERATION EFFECTS ON FUNCTIONAL CAPACITY OF DOG KIDNEYS A68-38239

ZARUBAILO, T. T.
NOISE EFFECT ON ADRENAL CORTEX AND THYROID GLAND FUNCTIONS AND ON HIGHER NERVOUS ACTIVITY OF WHITE RATS A68-38301

ZHAROV, S. G.
PHYSICAL CONDITION AND EFFICIENCY OF MEN DURING PROLONGED STAYS IN SPACECRAFT MODEL, NOTING ASTRONAUT OPTIMUM WORK-REST CYCLE REQUIREMENT A68-38278

ZHDANOV, A. M.
AUTOMATIC DATA PROCESSING SYSTEM FOR STUDIES OF HUMAN EXTERNAL RESPIRATION FUNCTION PERMITTING RESPIRATORY SYSTEM CONDITION CONTROL
A68-38265

ZHIRONKIN, A. G.
CENTRAL NERVOUS SYSTEM AND GAS EXCHANGE DURING PROLONGED STAYS OF MICE IN HYPEROXIC HELIUM MEDIA
A68-38284

ZHORZHOLIANI, B. T.
AUTOMATIC CONTROL SYSTEM FOR BIOTECHNICAL PHOTOSYNTHESIS OF CHLORELLA CULTURES ALTERNATELY EXPOSED TO LIGHT AND DARKNESS A68-38320

ZIGMOND, M. J.
METABOLIC TRANSFORMATIONS OF NOREPINEPHRINE AND DRUGS AFFECTING THESE PROCESSES IN AUTONOMIC NERVOUS SYSTEM A68-81833

ZWENG, H. C.
RETINAL INJURIES IN MONKEYS FROM NEODYMIUM, CARBON DIOXIDE, AND Q-SWITCHED LASERS
AD-670852 N68-31466

ZYWIETZ, F.
BIOLOGICAL EFFECTS OF ELECTRON IRRADIATION IN 2 TO 6 GE V RANGE ON BEANS AND SEEDLINGS
N68-32134

Collections of NASA Documents

NASA is depositing its technical documents and bibliographic tools in eleven Federal Regional Technical Report Centers. Each Center, located in the organizations listed below, is prepared to furnish the general public such services as personal reference, inter-library loans, photocopy service, and assistance in obtaining retention copies of NASA documents.

California: University of California, Berkeley
Colorado: University of Colorado Libraries, Boulder
District of Columbia: Library of Congress
Georgia: Georgia Institute of Technology, Atlanta
Illinois: The John Crerar Library, Chicago
Massachusetts: MIT, Cambridge
Missouri: Linda Hall Library, Kansas City
New York: Columbia University, New York
Pennsylvania: Carnegie Library of Pittsburgh
Texas: Southern Methodist University, Dallas
Washington: University of Washington Library, Seattle

In addition, NASA publications are currently being forwarded to the public libraries in the cities listed below:

Alabama: Birmingham
Alaska: Anchorage
Arizona: Phoenix
Arkansas: Little Rock
California: Los Angeles, Oakland, San Diego, San Francisco
Colorado: Denver
Connecticut: Hartford, Bridgeport
Delaware: Wilmington
Florida: Miami
Louisiana: New Orleans
Maryland: Enoch Pratt Free Library, Baltimore
Massachusetts: Boston
Michigan: Detroit
Minnesota: St. Paul
Missouri: Kansas City, St. Louis
New Jersey: Trenton
New York: New York State Library, Brooklyn, Buffalo, Rochester
North Carolina: Charlotte
Ohio: Cleveland, Cincinnati, Dayton, Toledo
Oklahoma: Oklahoma City
Pennsylvania: Pittsburgh
Tennessee: Memphis
Texas: Fort Worth, San Antonio
Washington: Seattle
Wisconsin: Milwaukee

An extensive collection of NASA and NASA-sponsored scientific and technical publications available to the public for reference purposes is maintained at the Technical Information Service, American Institute of Aeronautics and Astronautics, 750 Third Avenue, New York, New York, 10017.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546

OFFICIAL BUSINESS

FIRST CLASS MAIL

POSTAGE AND FEES PAID
NATIONAL AERONAUTICS A
SPACE ADMINISTRATION

POSTMASTER: If Undeliverable (Section
Postal Manual) Do Not R

"The aeronautical and space activities of the United States shall be conducted so as to contribute . . . to the expansion of human knowledge of phenomena in the atmosphere and space. The Administration shall provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."

—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

TECHNICAL REPORTS: Scientific and technical information considered important, complete, and a lasting contribution to existing knowledge.

TECHNICAL NOTES: Information less broad in scope but nevertheless of importance as a contribution to existing knowledge.

TECHNICAL MEMORANDUMS: Information receiving limited distribution because of preliminary data, security classification, or other reasons.

CONTRACTOR REPORTS: Scientific and technical information generated under a NASA contract or grant and considered an important contribution to existing knowledge.

TECHNICAL TRANSLATIONS: Information published in a foreign language considered to merit NASA distribution in English.

SPECIAL PUBLICATIONS: Information derived from or of value to NASA activities. Publications include conference proceedings, monographs, data compilations, handbooks, sourcebooks, and special bibliographies.

TECHNOLOGY UTILIZATION PUBLICATIONS: Information on technology used by NASA that may be of particular interest in commercial and other non-aerospace applications. Publications include Tech Briefs, Technology Utilization Reports and Notes, and Technology Surveys.

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION DIVISION

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546